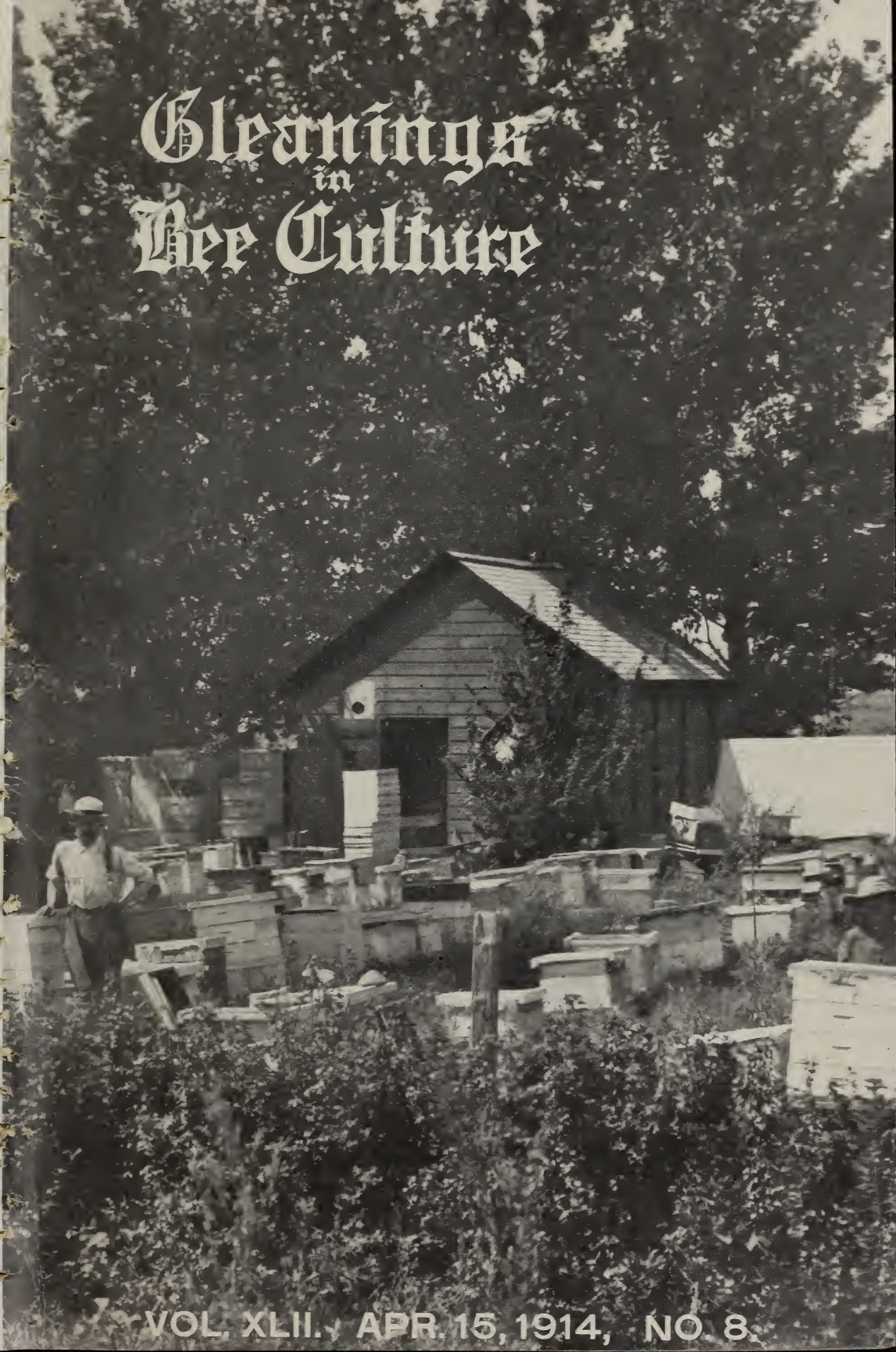


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Cleaning in Bee Culture



VOL. XLII. APR. 15, 1914, NO. 8.

ANSWERS TO 150 QUESTIONS

By the Editor of
GLEANINGS IN BEE CULTURE

The first fifty or sixty questions are those commonly asked by beginners. The remainder are queries that naturally arise in the minds of more experienced beekeepers. The last hundred questions have been asked by GLEANINGS subscribers, and are put in permanent form in this way because they cover those points which so often perplex beekeepers.

The index enables one to find at once answers which will help him to solve many of the puzzles connected with the care of bees.

The five questions given below have been taken at random from the book.

How can I tell a queen-cell from all the rest?

What is the best way to introduce a valuable queen?

What must be planted for bees to work upon?

I have an engagement to give a live-bee exhibit at our county fair this fall. This will be my first experience. Is it advisable to feed the bees while they are confined?

In comparison, all points considered, for comb honey, what advantage if any has the $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{7}{8}$ over the $4 \times 5 \times 1\frac{3}{8}$ section?

Send for the book as premium when you renew your subscription to GLEANINGS, and read the answers to these questions and the other 145.

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Western States, C. C. Clemons Bee Supply Co., 128 Grand Ave., Kansas City, Mo.
Southern States, J. J. Wilder, Cordele, Ga., and many others here and abroad.

W. T. Falconer Manufacturing Company, Falconer, New York

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ZANESVILLE—the metropolis of eastern and southern Ohio—is the logical distributing-point for the beekeepers of Ohio, West Virginia, and western Pennsylvania; and those more remote can be served with a large degree of satisfaction on account of the superior shipping facilities of this city.

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Prospects for the coming season are unusually bright, and both prudence and economy would suggest the early placing of your order.

E. W. Peirce, Zanesville, O.

Airdome Bldg., South Sixth St.

It turns over an important "new leaf" beginning with the January number.

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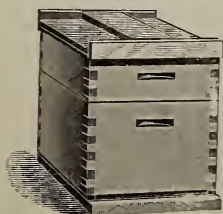
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HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING-RULES Adopted at Cincinnati, Feb. 13, 1913.

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH.

1. *Extra Fancy*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. *Fancy*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white, and not more than six unsealed cells on either side exclusive of the outside row.

3. *No. 1*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2*.—Comb not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR.

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT.

1. *Heavy*.—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium*.—No section designated as medium to weigh less than twelve ounces.

3. *Light*.—No section designated as light to weigh less than ten ounces.

In describing honey, three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: Fancy, white, heavy (F-W-H); No. 1, amber, medium (1-A-M), etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY.

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or that in badly stained or propolized sections; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

HONEY-GRADING RULES ADOPTED BY THE COLORADO STATE BEEKEEPERS' ASSOCIATION, DECEMBER 13, 1911.

FANCY WHITE.—Sections to be well filled, comb firmly attached to all sides and evenly capped except the outside row next to the wood. Honey, combs, and cappings white, and not projecting beyond the wood; wood to be well cleaned; no sections in this grade to weigh less than 13½ ounces.

No. 1.—Sections to be well filled, combs firmly attached on all sides and evenly capped, except the outside row next to the wood. Honey white or very slightly off color. Combs not projecting beyond the wood; wood to be well cleaned; no section in this grade to weigh less than 13½ ounces.

CHOICE.—Sections to be well filled; combs firmly attached; not projecting beyond the wood, and entirely capped, except the outside row next to the wood. Honey, comb, and cappings from white to amber, but not dark; wood to be well cleaned; no section in this grade to weigh less than 12 ounces.

No. 2.—This grade is composed of sections that are entirely capped, except row next to wood, weighing from ten to twelve ounces or more, also of such sections that weigh 12 ounces or more, and have not more than 50 uncapped cells all together, which must be filled. Combs and cappings from white to amber in color, but not dark; wood to be well cleaned.

EXTRACTED HONEY.—Must be thoroughly ripened, weigh 12 pounds per gallon. It must be well strained, and packed in new cans. It is classed as white, light amber, and amber.

STRAINED HONEY.—This is honey obtained from combs by all other means except the centrifugal extractors, and is classed as white, light amber, amber, and dark; it must be thoroughly ripened and well strained. It may be put up in cans that previously have contained honey.

BOSTON.—We quote fancy and No. 1 white comb honey at 15 to 16; fancy white extracted honey in 60-lb. cans, 11. Beeswax, 30.

Boston, April 4.

BLAKE-LEE CO.

INDIANAPOLIS.—Fancy white comb is being offered here at 16 to 17 cents per pound; amber comb, 14 to 15; white-clover extracted, 9 to 10 in 5-gallon cans. Much comb honey is being held here; but at this writing there is very little demand. Extracted is in fair demand. Producers are being paid 32 cents cash for beeswax, or 34 in trade.

Indianapolis, April 3.

WALTER S. POWDER.

Honey reports continued on page 5.

JUST
OUT!

New 1914 Catalog--"Everything for Bees"

Lay your plans for the new season now. Send for the 1914 Muth Catalog of Beekeepers' Supplies. It's just off the press. In it you will find full information about the remarkable MUTH SPECIAL Dovetailed Hives. Drop a postal card at once—sure!

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P. S.—Ship us your old combs and cappings and let us render them for you. Our process extracts the last drop of wax from the slumgum. This means money for you. Write for full particulars.

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Our new 1914 catalog contains double the pages of former editions and requires extra postage. It is filled from cover to cover with complete lists of goods in every line to meet every requirement of beekeepers. If you haven't received a copy when you read this, be sure to ask for one. It will save you money.

New Features for 1914

Few radical changes have been made this season. It should be noted, however, that we will send out with regular hives, unless otherwise ordered, the metal telescopic or R cover with super cover underneath. The side rail for the bottom-board will be extra length so as to overcome the difficulty experienced by some last season. Improvements have been made in extractors. We shall carry a very heavy stock so that orders may be filled with our usual promptness. Write us your needs.

C. H. W. Weber & Co.

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Cincinnati, Ohio

Gleanings in Bee Culture

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H. H. ROOT

Ass't Editor

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Business Mgr.

Department Editors:—Dr. C. C. Miller, J. E. Crane, Louis H. Scholl, G. M. Doolittle, Wesley Foster, J. L. Byer, P. C. Chadwick.

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LIVERPOOL.—The honey market is dull for Chilian, and sales only retail. For pile 1, \$6.72 to \$7.20 is quoted. Pile 2, \$6.72; pile 3, \$5.32 to \$5.76. We are without supplies of Chilian beeswax. The market is firm. Value \$41.04 per cwt., as to quality. Liverpool, March 18. TAYLOR & CO.

ZANESVILLE.—We quote No. 1 to fancy white comb at 16½ to 18½ in a jobbing way; 18 to 20 wholesale. Best white extracted in 60-lb. cans, 9 to 10. These quotations are for white clover. Western honeys rule about a cent less. The market is quiet. Producers are receiving for beeswax 32 to 33 cents cash, 34 to 35 in exchange for bee supplies. Zanesville, April 7. EDMUND W. PEIRCE

DENVER.—Our market is getting fairly well cleaned up on comb honey, and it looks as if it would be entirely used up before the new crop comes on. Our jobbing prices are as follows: Strictly No. 1 white, fancy stock, per case, \$2.52; choice, good color and heavy weight, per case, \$2.39; No. 2, well finished, fair color, per case, \$2.25. THE COLORADO HONEY-PRODUCERS' ASSOCIATION, Denver, April 7. F. RAUCHFUSS, Mgr.

ST. LOUIS.—We have nothing new to report in our honey market since our last letter. Comb honey has been moving very slowly lately and stocks here are still quite large. Amber extracted honey, for manufacturing purposes, has a good demand, and our market is almost bare of this quality. We are still quoting, in a jobbing way, Southern extracted honey in barrels at 6½ to 7; 5-gallon cans, 7 to 7½; dark, ½ to 1 ct. less; comb honey, fancy clover, 15 to 16; light amber, 13 to 14; amber, 11 to 12; dark and inferior, less. By the case, fancy clover brings \$3.00 to \$3.25; light amber, \$2.50 to \$3.00; amber, \$2.00. Beeswax is very firm, and quoted at 34 for prime; impure and inferior, less. R. HARTMANN PRODUCE CO.

St. Louis, April 4.

QUEEN-BEES TO ORDER.

Pompano will probably soon have more queens than any other village in the world, the queens to be of the bee variety. E. R. Root, son of A. I. Root, millionaire honey-producer and king of the bee business, after a week's sojourn in this part of the State, has practically decided upon establishing in Pompano a colony for raising queen-bees, and upon his return home will make definite arrangements. With Mr. Selsor, an authority on chemistry or honey and beeswax, and several other men prominent in their industry, Mr. Root came to the Southern East Coast early last week, and made a close study of conditions along the coast and in the Everglades. Several conferences were held with O. O. Poppleton, the Florida bee king.

The establishing of the queenery at Pompano will mean several hundred more bee colonies, according to Mr. Poppleton, and this region will become famed for its honey as well as for its grapefruit, tomatoes, etc.—*Ft. Lauderdale Herald*.

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BY ANNA BOTSFORD COMSTOCK

This is an excellent book for the beginner. Nothing better. We cordially recommend it to all who are learning beekeeping by their own effort. Having commenced beekeeping three times, the talented author is in a position to furnish the right kind of advice. You can not go wrong in getting this book. It is charmingly written and easily understood. Price \$1.10 postpaid.

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No answer came, and he called more loudly, "Honey!"

Still he got no reply, and, becoming uneasy, he repeated the endearing term with still more power. This time he was answered.

"Get out, you idiot!" came an indignant male voice from the other side of the door. "This is a bathroom, not a blooming beehive!"

Gleanings in Bee Culture

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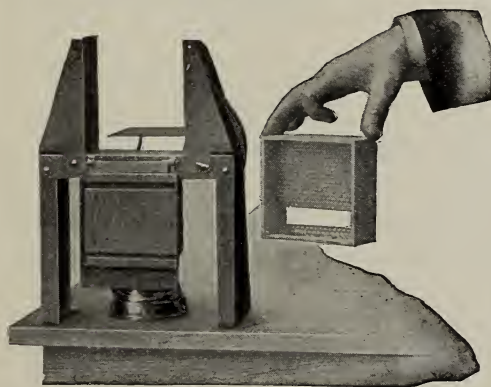
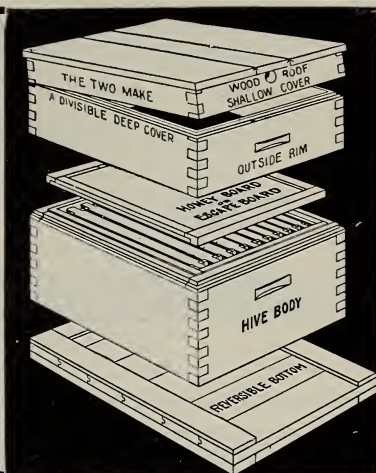
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The BEEKEEPERS' REVIEW

Will begin publishing the proceedings of the NATIONAL Convention at St. Louis with the May number. What we have to offer our readers for the last eight months of 1914 is the very best thought of such noted persons as Dr. E. F. Phillips, Department of Agriculture, Washington, D. C.; Prof. F. W. L. Sladen, Experimental Farm, Ottawa, Canada; Prof. Morley Pettit, Ontario Provincial Apiarist; Mr. Wesley Foster, Associate Editor of the REVIEW; Mr. E. E. Burton, Falmouth, Ky.; Elmer G. Carr, Director N. B. K. A.; Mr. J. M. Buchanan, Franklin, Ky.; Director N. B. K. A.; Mr. Joseph J. Anderson, Idaho; Mr. E. S. Miller, Indiana; Prof. H. F. Wilson, Oregon Agricultural College; Mr. H. F. Hillenmeyer, Lexington, Ky.; Mr. J. E. Pleasants, California; Mr. Frank Pellett, Vice-president N. B. K. A., Iowa. President Gates left no "stone unturned" to secure a higher grade of program than heretofore, and the above array of notables speak volumes for his efforts. Besides the above, many other "feature" articles will appear during the balance of the year. Mr. J. J. Wilder will tell the most interesting and valuable portion of his series of articles, "The management of 3000 colonies of bees in 50 years," during the remainder of the year. Then there is the "Pearce Method" now running in the REVIEW. The May number will tell how he manages to produce large crops of comb honey with only two visits each year. Then there are many other valuable articles that space forbids mentioning at this time that will appear during the next eight months. Every reader of Gleanings will be interested in this fine array of material that is about to be published in the REVIEW, and to make it very easy for every one to acquire it we are going to offer the balance of 1914, beginning with the May number, for only 50 cents. Any one of the above valuable contributions ought to be worth the 50 cents we are asking for the entire eight numbers. Be sure and get on the list while the supply is at hand. Address with remittance,

THE BEEKEEPERS' REVIEW, NORTHSTAR, MICHIGAN

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ESTABLISHED 1889

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A very complete stock of goods on hand, and new arrivals from factory with an occasional carload to keep my stock complete. Shipments are being made every day, and the number of early orders received is very encouraging. Numerous orders reached me during our February and March blizzards, which indicates that the beekeepers have confidence in the coming season.

My new catalogs have been distributed. If any of my friends have failed to receive theirs, please write for another. If more convenient you may make up your order from the Root Catalog---our prices being identical. For very large orders at one shipment, write for an estimate, and I can save you something by following the factory schedule.

I shall be glad to hear from my friends as to how bees are wintering and springing, and as to prospects for clover.

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- CATALOG C.—BERRY SUPPLIES. We carry a full stock of standard quart baskets and 16-quart crates. BEESWAX WANTED.

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. . . THE . . .

NEW American Bee Journal IT PLEASES

Before closing I wish to offer my congratulations on the splendid appearance and character of the *American Bee Journal* as it comes to us. No branch of agriculture, it would seem, is making more progress than that of beekeeping, and the *Journal* is doing its share to foster that which is best in all departments.

Bridgeport, Wis., Aug. 4, 1913. HARRY LATHROP.

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C. P. DADANT

DR. C. C. MILLER

THE American Bee Journal, Hamilton, Illinois

Gleanings in Bee Culture

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APRIL 15, 1914

NO. 7

EDITORIALS

Latest Reports from the Apalachicola Apiary.

HONEY is coming in from black tupelo with a rush—so much so that it is crowding our queens and delaying brood-rearing. See page 306. As we are running almost entirely for increase we should prefer a more moderate flow. Prospects for white tupelo are excellent, and this is the main source of honey for that district. In spite of the backward weather in February and March, conditions are very good for making the expected increase. Perhaps the question may be asked, "What is the 'expected increase'?" Well—er, we'll tell later *after* we get it.

Later.—Black tupelo stopped on the 6th with white tupelo about ten days off.

H. J. Mercer of Los Angeles in Sing Sing Prison, New York.

ACCORDING to a clipping from the Los Angeles *Times*, reprinted in the *Western Honey-bee*, H. J. Mercer, lawyer, beekeeper, supply manufacturer, and supply dealer at Los Angeles, has been given a sentence of nine years in Sing Sing prison for forging a mortgage of \$250 on an aged woman. We are also informed that he was wanted in Los Angeles "on a felony complaint charging him with hypothecating fraudulent notes alleged to be worth \$2000." It is further alleged that detectives who have been on his trail assert that he got away with at least \$75,000 from other sources in the past year or two.

We are very sorry to hear this—more so because Mr. Mercer was a bright keen young man, capable of earning an honest living as a lawyer, as a bee-supply dealer, or as a beekeeper.

History repeats itself. The young man started out as thousands of others have done with a good bringing-up and with an honest heart. As nearly as we can learn, he was trying to do things on too large a scale. He incurred obligations which he could not

meet, and then something happened—temptation, flight from justice, and finally prison walls.

The reader should not get H. J. Mercer confused with L. E. Mercer, a prominent beekeeper of California who enjoys an honorable record.

More Expensive to Winter Bees in the South than in the North.

WHILE in many places bees in the South can work every day in the year, that simply means that the bees that go into late fall or winter will not see spring. The old bees will constantly die off, and the young bees will take their places. This means that brood-rearing will continue with interruptions all winter. If 10 to 15 lbs. would take care of a colony of bees for six or seven months in a good cellar in the North, it would probably take four or five times as much to carry the same colony through for the same period in many parts of the South. Said Mr. O. O. Poppleton, "My problem is not so much to encourage brood-rearing as to keep it down. Constant breeding compels the bees to fly for water, pollen, and nectar, wearing themselves out.

If a colony in southern Florida can gather a surplus of 50 lbs. average, when the season is at its best, those same bees will probably gather, during the entire season, four or five times as much honey as a similar force of bees would in the North. If it were not for the constant renewing of bee blood our Southern beekeepers would have a great bonanza of honey production.

The Old Original Book, "Langstroth on the Hive and Honey-bee," Reprinted.

THE reprint of the old original edition of "Langstroth on the Hive and the Honey-bee," dated 1853, and containing over 400 pages, in cloth, is now ready for distribution. Our older readers will remember that

this old volume, about the time father Langstroth brought out his hive and system. was one of the most charmingly written and entertaining books that was ever published. Indeed it so stirred A. I. Root that he wrote in his A B C of Bee Culture:

What a gold-mine that book seemed to me! * * * Never was romance so enticing—not even Robinson Crusoe; and, best of all, right at my own home I could live out and verify all the wonderful things told therein.

There have been repeated calls for a reproduction of this famous work, so much so that The A. I. Root Co. finally decided last fall to make a reprint of it. It has now been reproduced in paper and binding with all the original cuts just as it appeared in 1853, without any change whatever save an introduction by C. P. Dadant.

Some of our younger readers might feel that perhaps this work would be out of date. While this is true, of course, to a certain extent, the fact is, that father Langstroth was *60 years ahead of his time*—so much so that he revolutionized beekeeping throughout the world. The old original book that helped do this is well worth reading—especially so as it contains many tricks of the trade that are being heralded to-day as something new. From a historical point of view it is invaluable. No bee library can be complete without it.

We are able to furnish this old edition, just as it came from the hands of father Langstroth, the father of American beekeeping, in 1853, for \$1.00 postpaid; or in connection with GLEANINGS at the very low combination rate of \$1.50, or clubbed with the A B C and X Y Z of Bee Culture, a \$2.00 volume, for \$2.50; or with Dadant's Langstroth Revised, \$1.85.

Wintering, and the Prospects for a Honey Crop.

LATE reports show general good wintering throughout the country, with the exception of one or two areas where the late cold weather seems to have put the bees in a weakened condition. One district is in and around Philadelphia, and other districts are in the middle-southern States. However, we do not remember the time when the bees seemed to have been in better condition for harvest than this spring.

The prospects for a honey crop are from fair to good. Conditions were unfavorable in California, but late rains have improved the situation. Northern Florida is showing up well, and the southern part will do better than usual.

While the clovers do not show up quite as well as they did a year ago, there is every

reason to suppose there will be a fair crop from that source. A good deal will depend on whether there is a drouth from now till the time the clovers begin to mature. Spring is opening up favorably and rather early everywhere.

Later.—We are having regular blizzards of snow and rain.

Beekeeping Taught in Y. M. C. A. School.

WE are in receipt of a program announcing a course in practical beekeeping to be given in the Y. M. C. A. schools of Louisville, Ky., on Thursdays from March 26 to May 28 inclusive. We regret that it arrived too late for our April 1st issue.

OUTLINE OF COURSE.—J. O. DUNKIN, INSTRUCTOR IN CHARGE.

Thursday, March 26, "Possibilities in bee culture—How to begin." (Illustrated with moving pictures.) Richard Priest Dietzman. Thursday, April 2, "Inhabitants and industries of the hive," J. O. Dunkin. Thursday, April 9, "Equipment—location and arrangement of apiary," J. P. Martine. Thursday, April 16, "The hive and how to handle it," Walter C. Furnas. Thursday, April 23, "Swarming of bees—transferring," Ernest W. Brown. Thursday, April 30, "Enemies and diseases of bees—remedies," Otto F. Recktenwald. Thursday, May 7, "How to produce comb honey," Richard Priest Dietzman. Thursday, May 14, "How to produce extracted honey," J. P. Martine. Otto F. Recktenwald. Thursday, May 21, "Interrelation of bees and plants—Robbing in the apiary—Details about honey and beeswax," J. O. Dunkin. Thursday, May 28, "Feeding and wintering bees," Walter C. Furnas, Ernest W. Brown.

For full particulars write Y. M. C. A. School, W. H. Lippold, Director, Third and Broadway, Louisville, Ky.

This is a step in the right direction, and deserves the encouragement and financial support of every beekeeper. Educational work of this kind is strictly in keeping with the purpose of such schools. Beekeeping has been, unfortunately, left out of our school work of the past; but it is coming now more and more to be recognized, not only in our public schools, but in our agricultural colleges. The two most prominent at the present time are those of Amherst, Mass., and Guelph, Ontario, Canada. The tide is rising, and coming generations will feel the impetus and benefit of college-bred beekeepers in the same measure and in common with other agricultural pursuits.

Natural Pollen Far Superior to Artificial.

AT our Apalachicola yard we have been furnishing our bees with artificial pollen substitutes, when natural sources were lacking. While we succeeded in starting up brood-rearing by giving bees common wheat

flour such as we make bread of, yet it was easy to see that the natural product was far superior.

Said Mr. A. B. Marchant, whom we regard as one of the best authorities on bees in the United States, "I believe, Mr. Root, the reason why natural pollen is so much more effective is because the bees get a small amount of nectar *at the same time*. If we can furnish nectar or sweetened water along with our artificial pollen, we may be able to get practically the same result. But somehow we do not know yet how to make the combination."

Mr. A. B. Marchant discovered that common white wheat flour would be taken by bees about as readily as any other artificial substitute. He spread some old combs out in a sheltered location, and then sprinkled common flour over them. The smell of the combs attracted the bees, and both he and his son Ernest have discovered that the bees will take the flour from these old combs far more readily than they will from pans or trays. Mind you, the combs are not put in any hives, but placed outdoors where all the bees of the apiary can have access to them. Mr. Ernest Marchant, at our suggestion, tried the experiment of mixing flour and thin sugar syrup; but he soon discovered that the bees would daub themselves up with the sticky paste. Notwithstanding he was feeding thin sugar syrup in Boardman feeders at the entrance of the hives, the pollen substitute on the combs did not yield the results of the real article.

Mr. A. B. Marchant's idea is that thin nectar should be fed to the bees in such a way that they will get a supply of nectar and flour both at the same trip. We know that bees require saliva or nectar to mix up pollen and stick it in their pollen-baskets. Now, who is there who is going to solve the problem of making an artificial combination of the two that will yield the same results as natural pollen?

Out-apiaries Operated by Motor-boat vs. Wagon or Automobile Trucks.

DURING our recent trip to Florida we had an opportunity to compare the two methods of transportation between yards of bees. In Florida, especially yards near rivers, bays, and lakes, a gasoline-launch is the prevailing means of going to and from yards, carrying stuff back and forth, and it is a very nice way. It is free from dust and dirt, bad roads or mud, scaring horses, and punctured tires. There is nothing more invigorating or delightful than to go tuppy, tuppy from yard to yard in a gasoline-

launch; and, conversely, there is nothing more aggravating than a boat out in mid-bay or river that will not go. If out in a large body of water, the wind and waves rising, there is no particular delight in monkeying with a motor that positively refuses to mope. Some of these two-cycle motors are an aggravation in this respect; but as a general thing an experienced boatman will overcome all of these difficulties. One disadvantage of the boat is slowness of travel. Unless one owns a high-power boat, which would be too expensive, the speed will not be much over six or eight miles an hour, while an automobile would double or treble that rate of travel. But one of the great advantages of the boat for outyard work is the smoothness of running. There is no jar or jolt, no puncturing of tires, no slipping or sticking in the mud, no delay or stoppage on account of rain, but an abundance of fresh air, so necessary in moving bees up and down the river or bay. Still again, a motor boat that will carry forty or fifty colonies will not cost over \$200 to \$300, and a second-hand boat can be obtained for half these figures, while an automobile would cost four or five times these amounts. The only possible trouble from the boat may be leakage and motor trouble; while in an automobile truck there are a hundred and one things that may go wrong, any one of which may stop the machine on the road. Unfortunately, however, most of the good locations are remote from rivers, bays, and lakes, and the great majority of beekeepers will have to submit to the cost and inconvenience of wagons and motor trucks.

Bees Recognized in Farm Papers.

MORE and more the value of bees is becoming recognized in the agricultural papers of all kinds. The progressive fruit-journals, most of them at least, have given the bees their rightful credit while the farm papers voluntarily run editorials telling of the value of bees for pollenizing blossoms. It indicates the beginning of the end of this wholesale spraying of blossoms.

The *Connecticut Farmer* and *New England Farm* in their issue for January 31 have a splendid editorial that is right to the point. We quote here a few sentences at random:

We have long been blinded to the beneficent offices of these little creatures. Without them horticulture in all its departments would perish. * * * Strange to say, there are any number of fruit-growers who make all sorts of wild claims that bees puncture the skin of fruit. There is no evidence on record sufficient to convict the bees of any such depredations. * * * In one of Mr. VanPelt's addresses at the

State Board of Agriculture meeting he told of the efforts made by western farmers to rid the country of sweet clover, as they considered it a noxious weed of the worst character. They even went to the extent of proposing that beekeepers be driven out of the country, because bees help to spread sweet clover; but of late these same farmers have come to realize that the much-despised sweet clover is a forage crop, second in importance only to alfalfa. When fruit-growers argue that bees destroy fruit they are taking the same stand taken by western farmers in their misguided crusade against sweet clover. * * * * * Every fruit-grower ought to realize the positive necessity of delaying spraying operations until the blossoms are so far gone that the bees have ceased to work upon them. To spray trees in bloom, thus poisoning the bees, is a case parallel to that of the miser who killed the goose that laid the golden egg.

We have always felt that articles in a bee-journal along this line are not very convincing to fruit-growers, for they naturally think that the bee-journal is prejudiced. However, after our special numbers on bees and fruit we have noted with a considerable degree of satisfaction that the beekeepers make use of the material thus furnished in stirring up an interest in their local papers and in the farm magazines. Speed the day when the truth may become *widely known!*

The Case of C. I. Graham, who, it is Alleged, has been Scattering Foul Brood in Some of the Western States.

For some months past we have been receiving complaints regarding Mr. C. I. Graham, formerly of Oroville, Cal., but now of Reno, Nevada. It is alleged that he has been moving diseased bees from place to place, scattering foul brood wherever he has been. It is also claimed that his dealings with several persons have been unsatisfactory; that he buys or rents bees, alleging that he is going to form a big stock company.

Other parties go on to say that his methods are slovenly and careless; that if he had foul brood every beekeeper in range would get it, that he somehow gets control of a lot of bees and moves them into a new territory, and that it apparently makes no difference to him (Graham) whether the bees are diseased or not; that when he is through extracting he scatters his scraps and leavings of combs out to be cleaned out by robbers; and, of course, the bees of his neighbors, if there is disease in such combs, would be infected. Among these complainants are several men of standing.

In the *American Bee Journal* for November, page 368, a clipping was published to the effect that this Mr. Graham was arrested and found guilty of exposing diseased brood-combs, to the injury of the bees in

the vicinity. We were also informed that another case against him was pending. Just what the outcome of this was we have not been advised.

Believing it is always fair to give the accused a chance to defend himself we wrote to Mr. Graham, explaining the nature of the complaints, and under date of Feb. 21, at Reno, Nevada, he writes a very good letter, from which we quote the following:

I have no desire to attack any one; and the attacks made upon me are unjustified and unjustifiable. I have been made the subject of bitter persecution here in order to drive me out of this field as a competitor. The article in the *American Bee Journal*, to which you refer, was furnished by Inspector Guthrie, of this county, for that purpose, and was the result of malice and ill will—a feeling that I do not reciprocate. It is true that I was arrested, and tried in a justice's court here last fall for exposing diseased bee-combs. My apiary was visited by the inspector when he knew I was absent, and he took with him two men who were my avowed enemies; and while they did not produce any diseased bee-combs, as they would have done if they had found any, I could not, with these three hostile witnesses against me, escape conviction. . . . I am here, and here I am going to stay; and as I am not guilty of any wrong-doing I have no fear of what my enemies can do to me. I have been taught from childhood to return good for evil, and I shall do so in this unfortunate controversy. When the opportunity arrives that, with my 23 years of experience as a beekeeper, I can do Inspector Guthrie and the other beekeepers of this community where I live a good turn, I shall be on the spot to do it.

We can not think there was any malice or ill will on the part of Inspector Guthrie. As inspector of foul brood he had a duty to perform.

While we do not believe that Mr. Graham is malicious, yet the testimony in the form of various letters before us would indicate that he is slovenly, careless, and neglectful in his methods—so much so that his bees would readily get foul brood if it were anywhere around. It would appear, also, that if he got the disease he would not be greatly concerned about it. When such a man practices migratory beekeeping, moving bees from place to place by the carload, he would make trouble for beekeepers in any territory where he might go. Either Mr. Graham (if the above charges are true) should mend his methods, or his bees should not be admitted into localities protected by law. Assuming that he means just what he says, he should at once clean up his bees and keep them clean (if he has not done so already), or go out of the business. His neighbors have moral as well as legal rights that should be respected. It is surely up to Mr. Graham if he has been scattering foul brood unintentionally or otherwise to do his neighbor beekeepers "a good turn." Will he do it? We are going to take him at his word that he will.

Dr. C. C. Miller

STRAY STRAWS

Marengo, Ill.

I'M surprised at the general belief in breeding for improvement among writers in April 1st GLEANINGS. Not one, I think, opposes it.

If thin super foundation is worked less readily by the bees than medium brood, as shown, p. 139, extra-thin super must be still worse. I've no use for extra-thin, anyhow.

No JOKE, friend Byer, about rarity of bees here, on second-crop red clover. In Ontario you say *some* bees work on it, but in England *all* hive bees can work it, while here rarely any.

MY FIRST thought on seeing those bees on cover of GLEANINGS, April 1: "Those pictures are faulty; but they're 'the real thing.'" I don't see how you got dead bees to look so life-like.

O. BROMFIELD, I use five splints to hold medium brood foundation in frame. Don't know whether four might answer. I boil splints in wax till it stops frothing, then put in when wax has cooled to be just liquid; no special tool for imbedding—just the edge of a little board soaked in water.

G. M. DOOLITTLE says, p. 209:

Any beekeeper who has a spark of love for his pets is all awake for the season when the first song of the bluebird breaks forth on the air, and the musical croak or peeping of the frog in the pond is heard once more.

That's not written in rhyme, but it's poetry of the right sort. The man who isn't thrilled with such sounds is not a true beekeeper at heart, and thrills of that sort are beyond the purchase of money.

A. I. ROOT, you seem just a bit inclined, p. 275, to think we might as well sit complacently with folded hands and continue a lot of denominations of churches with the difference between tweedle-dum and tweedle-dee. Now look here; you old fellows may as well make up your minds to get out of the way for us younger ones, because the uniting of the sects is coming, believe me. In Canada a movement is on foot to unite Methodists, Congregationalists, and Presbyterians; in this country some denominations have already united, and it's in the air all over the land. When Billy Sunday was in Marengo all the churches worked together as one. The idea that they could do better work together then and better work apart afterward! Get out!

E. G. FINNUP, Finney Co., Kan., the world's champion sweet-clover grower, also an extensive stockman, has 1500 acres de-

voted to "the weed." From a 100-acre field he harvested 900 bushels of seed, bringing \$13,000. He considers sweet clover the equal of alfalfa; makes earlier pasture; will not bloat cattle; stands dry and freezing weather better; grows on land where alfalfa will not; yields with him a greater tonnage of hay; and grasshoppers don't bother it, but are very fond of alfalfa.—*Country Gentleman*, 657. [The farmers of Kansas seem more generally to recognize the value of sweet clover as a forage-plant than the farmers in some other parts of our country. In Kansas they have demonstrated that land that is too poor to grow any thing but prairie grass will grow sweet clover, and sweet clover is making that land come up in value in a way it never did before. It is very strange that some apparently up-to-date farmers, and even some scientific agriculturists in the East, regard sweet clover as a mere weed. Years ago they so regarded alfalfa. History repeats itself.—Ed.]

I THINK I was the first to publish that I had had a queen reared over a colony with a laying queen. That was accidental. I think I have never since succeeded intentionally. Last summer I tried it over ten colonies—dead failure; but in two or three cases where I had no thought of rearing a queen, where there happened to be brood in an upper story I was surprised to find a nice brood-nest with a young laying queen. Who knows the secret of success? [When Doolittle first brought out his book on queen-rearing, there did not seem to be any thing so very difficult about raising queens in an upper story with a laying queen below; but it will be remembered he used perforated zinc between the upper and lower stories; but later on he found that the upper-story proposition was not a success except during a general honey-flow when brood-rearing would be stimulated at its best. While we do not believe that the mating of queens in upper stories is a general success, we never regarded it as a difficult thing to accomplish when there were suitable conditions. Queen-breeders have for years raised cells in upper stories, and do it yet, as the simplest and most successful plan for securing well-fed baby queens. It is only a step further to get these young ladies married. Well, if you will turn to the last edition of the A B C and X Y Z of Bee Culture you will find some of the requisites for cell-building in upper stories.—Ed.]

J. E. Crane

SIFTINGS

Middlebury, Vt.

J. L. Byer tells us, page 145, all about his method of spring feeding and management, and he is sound to the center on this important subject.

* * *

What is the matter with your bees, Dr. Miller, that they do not work on second crop of red clover at Marengo? They work on it readily here in old New England. See page 125.

* * *

The Feb. 1st number of GLEANINGS, with its beautiful pictures of fruits and loaded fruit-trees, and advice about spraying, made it look almost like a horticultural journal. What a satisfaction to know that our bees are often of as much value to our neighbors as ourselves!

* * *

A truckman told me to-day that his horse would grow poor as fast standing in the cold as at work. Of course; for it requires fuel as surely to produce heat as power; and if bees have to endure long-continued cold it will just as surely reduce their vitality as work, and so shorten their lives.

* * *

Mr. Mayo's experience with bees in an orchard and grove, page 42, corresponds with my own. A little shade is good; but dense shade is bad. We have one yard partly in dense shade, and part but little shaded; and we find those having but little shade have done the best for a number of years.

* * *

Dr. Miller says, page 125, that a Swiss hotel and sanatorium advertise for honey, and remarks that "our hotels haven't got up to that yet." Well, perhaps not exactly; but we have supplied a sanatorium for some time, and I put up a lot to go to a hotel in one of our larger cities this very forenoon: and it is not the first hotel to buy of us either.

* * *

"Incomparable observer" is what Darwin called Henry Fabre, the celebrated French entomologist. Some of his works have been translated into English, and are full of interest to any lover of insect life. "The Social Life of Insects," "The Spiders," "The Life of a Fly," and "The Loves of Insects," are written in a simple, delightful style, and ought to be in every public library.

* * *

A. I. Root's temperance column reminds one of an old law enacted three or four

thousand years ago: "If an ox gore a man or a woman to death, the ox shall be surely stoned, and its flesh shall not be eaten; but the owner of the ox shall be quit. But if the ox was wont to gore in times past, and it hath been testified to its owner, and he hath not kept it in, but it hath killed a man or woman, the ox shall be stoned, and its owner shall be put to death." Alas! who shall count the number of men and women that a modern beast has gored? Shame on our boasted civilization that allows both the beast and the owner their liberty!

* * *

A good deal has been said of the value of parcel post in GLEANINGS, for beekeepers. We have used it for shipping small lots of honey, but lately we shipped a box of two dozen small bottles of honey to New York, which, on arriving at destination, was found to have had nine of the bottles taken out without regard to the command "Thou shalt not steal." On inquiring at the local postoffice we were informed that they were not responsible, as we had not had the package insured. At the express office we found the package could have been sent for even less by express than by mail. Perhaps we shall have to conclude that the most valuable service of the parcel post is in compelling the express companies to reduce their rates to a reasonable sum. [In many cases express is cheaper than parcel post.—Ed.]

* * *

Arthur C. Miller tells us, page 131, that stimulative feeding "should always be done in the fall. Give them all you think they will need, then double it, and then add half as much again for good measure." Now, that is generous, and it always makes us feel good to be generous; and it never pays to be stingy with our bees; but let us examine this statement a little. I find many colonies the 1st of October that I think need at least 35 lbs. of heavy syrup. Suppose I double it. That would be 70 pounds; then half as much again would make 87½ pounds—more than the colony could store in an eight or even a ten frame hive. I tried feeding very heavily once, many years ago. How I enjoyed seeing the bees lie out in October! Next spring they didn't lie out, but a good many of them were *laid out*. No, Miss or Mr. Beginner; feed enough and then stop. Mr. Miller is a good fellow and a great thinker, and I enjoyed his notes immensely; but some of them need to be discounted a little.

BEEKEEPING IN CALIFORNIA

P. C. Chadwick, Redlands, Cal.

In the March 1st issue, under High-pressure Gardening, A. I. Root speaks of the potato industry and the great sale of seed for southern markets by E. E. Harington. I never see the subject of the potato business mentioned but that I am at once interested. I followed the potato-growing business for a good many years in the Kaw River Valley, in eastern Kansas. At that time nearly the entire valley from Kansas City to Topeka was one vast area of potato-fields. We discovered early in the history of the industry there that northern-grown seed is far superior to any we could preserve; for that, indeed, was the secret of the greater success with the northern grown. We secured nearly all of our seed from the Red River Valley of the North, and used nothing but the early Ohios. The secret is, the fact that the potato dug (of necessity) as soon as matured, holds all of its vitality. In the South we were obliged to keep our native seed for at least eight months after maturity, and its vitality was very much exhausted by planting time. I am the originator of the White Early Ohio potato. I discovered two white tubers, evidently sprouts, when following the potato-plow in a field of the Red variety. I placed them in the cellar side by side. Unfortunately one of them froze; but, *very* fortunately, the other did not. I planted it in the spring. About half of its crop went back to the red stock. Only the white ones were replanted, and so on until the fourth season, when they came pure white. I had them grown in the Red River Valley of the North for two seasons, then sold the entire lot to the C. J. Vaughn Seed Co., of Chicago. They were introduced by this firm.

* * *

No rain has fallen since February 21. The entire period from that date until March 21 was a period of cloudless skies. March 16 a desert wind began blowing—one of those dry electric winds known as a "norther" that drives our moisture away faster than any other weather condition. On the 18th the record for high temperature came nearly being broken, it having reached the highest point for 39 years. These conditions, together with the warm winter, have forced the spring forward till the flora now blooming is a full month or more ahead of its season. Last year the first orange flower I saw open was on the 7th day of April. This year the bloom will be almost entirely gone by that date. The

sage has been blooming more or less for the past month, and is now almost at its best, more than a full month ahead of its season; for as a rule we figure on little surplus from the sage before May 1.

Some of the most peculiar conditions have come with the season I have ever seen: and while the bees have improved every moment, building up from very small colonies to full-fledged honey-gatherers, yet they are behind the season. February 23 I discovered that I had about forty colonies very short of stores and long on brood. Fearing they would have to face a week of bad weather at any time, I decided to feed them at once; for such conditions would have forced them to starvation. I fed 17 colonies a gallon each of sugar syrup. My son returned to the apiary in a few days to feed the rest. My anticipated bad weather did not come, but I was not able to return to the apiary for a period of two weeks. When I did return I not only found some of my syrup still in the feeders, but all had an abundant supply of honey gathered from the sage, and many colonies storing surplus. The sage has been yielding freely until the 21st, when the weather became cooler and the clouds overcast the sky. So far I have not seen a trace of our old enemy the sage weevil. We shall doubtless harvest at least a fair crop from the sage. The condition of the bees in the sage belt is not gratifying. The average loss will reach 50 per cent at least, according to reports received. Reports from San Diego Co. indicate that the loss there has been very heavy. I am informed by Inspector Meeker that in my own county (San Bernardino) the loss has been fully a half, some apiaries having lost as high as 80 per cent. I always figure myself in San Bernardino County; but in reality my bees are in Riverside except those at my home.

On account of the heavy loss of bees, together with the slowness of many colonies in reaching the supers, we can not expect an excessive heavy crop from the sage, especially if we should not have more rain during the spring, which looks probable.

Later.—Since writing the above, light rains have fallen, which improves the prospects to a great extent. The button sage will develop to its fullest capacity, and is assured of moisture to sustain it until nature bids it cease blooming. The white sage, wild buckwheat, etc., now seem assured of their needed moisture,

CONVERSATIONS WITH DOOLITTLE

At Borodino, New York.

BEES AND APPLE-BLOSSOMS.

"I see that Doolittle lays considerable stress on the pollen and nectar which come from the early bloom, and especially that from the willows and hard maple. How about the apple-blossoms? Are they not of equal help to the bees with those of an earlier blossoming? I had supposed that the nectar the bees gather from apple-bloom is the greatest factor of all the year in stimulation of brood-rearing in time for an army of bees for the white-honey harvest."

I consider your supposition as regards the "greatest factor" correct, providing the bees have gotten well under headway with their brood when the bloom from the apple appears. But to have this bloom of the greatest value, brood should be started so that 8000 to 12,000 bees are nearing maturity when the apple-bloom begins to open. I consider the great value of nectar from apple-bloom to lie in its stimulating quality, toward plentiful brood-rearing, and in producing stores to tide over the period of scarcity which immediately follows this bloom for a time approximating twenty to twenty-five days.

More than half a century ago our beloved M. Quinby penned these words: "In good weather, a gain of 20 pounds is sometimes added to the hives during the period of apple-blossoms. But we are seldom fortunate enough to have continuous good weather, as it is often rainy, cloudy, cool, or windy, all of which are very detrimental. A frost will sometimes destroy all, and the gain of our bees is reversed; that is, their stores are lighter at the end than at the beginning of this season of flowers. Yet this season often decides the prosperity of the bees for the summer. If there is good weather now, we expect our first swarms the fore part of June; if not, no subsequent yield of honey will make up the deficiency." And no truer words were ever uttered, as applied to central New York; and what applies to this locality will apply quite generally to the Northern States.

From this we see that the apple-tree bears no mean relation to the person interested in apiculture; outside of the fruit it yields. Apple-blossom honey is somewhat rank and strong when first gathered; but after staying on the hive till thoroughly ripened, it assumes a nice spicy flavor, though when at its best it can hardly be said to equal that from clover or basswood. I believe that, if we could have the same

number of bees in the hive in apple-blossom that we do in basswood, and if the weather could be equally good, the yield from this source would be nearly or quite as good while the bloom lasts; but the trouble is, the bloom comes so early in the season that we do not have the bees; and, still worse, the weather is usually such that the bees do not have an opportunity every year to work more than enough to encourage brood-rearing, and sometimes not even that. For this reason I have found that it does not pay to try to work the colonies up to an unusual strength with the hope of securing a surplus in comb honey from this source.

It is quite amazing what a good colony which has wintered well will do where there is continuous good weather when the apple-trees are in bloom. In 1877 we had a good yield from this source—so much so that many colonies stored, capped, and finished from five to twenty pounds of surplus in the section supers, besides storing in every available cell below not occupied with brood or pollen; and the result from the apiary that year was the highest ever obtained by the writer, which was an average of 166 2-3 pounds from each old colony in the spring. Another year, when we had continuous good weather throughout the whole bloom, a hive on the scales made a gain of 31 pounds during the bloom.

I well remember trying a guessing experiment that year. I counted the bees as they came in at the entrance loaded with nectar. They were well at work at about seven in the morning, and the first count showed 42 loaded bees coming in during one minute; the next minute, 46; the third, 41; the fourth, 44. At about ten o'clock I counted again, and the average at this time was 49 to the minute on five counts, while at one o'clock the average was 51 per minute, and at five o'clock the number of loaded bees entering the hive proved to be nearly the same as the first count in the morning. I figured that each bee carried a drop of nectar; then estimated the number of drops it would take for a pound, calling nine pounds as the weight of a gallon of this nectar as it came from the fields. Then I "struck an average" to get the number of bees per minute for the whole day, and multiplied this number by the number of minutes worked, and decided that the result of that day's work would be 7½ pounds. I had weighed the hive in the morning, before any bees went to work, and the

Continued on next page.

BEEKEEPING IN THE SOUTHWEST

Louis H. Scholl, New Braunfels, Texas.

Texas and California, both with a reputation as leaders from an apicultural standpoint, seem to have an even start this year as concerns the prospects for a good honey season. With an unusual amount of rainfall through the winter months, and rains last fall and this spring, indications are for a large crop of honey in each of these two States. Strange it is, though, that, while both of these States are leading honey-producers, Texas does not affect the northern and eastern honey market, while California does. Instead, Texas consumes almost all of her own honey, assisted by Oklahoma, where a great deal of Texas honey finds a good market.

* * *

The more I study the matter of unpainted hives vs. painted ones, the more convinced I am that painting them is the only sensible thing to do. These observations, of course, are for this part of the country where the summer sun is perhaps somewhat more severe. The more unpainted hives I see in my travels around, the more I detest them on account of their unsightly weathered appearance and the gaping corners and split sides or ends. Some of the wise ones claim that the latter trouble is all due to the way the hives are nailed; but I am here to tell you that there is not so much in this argument. Of course, there is a difference between good and poor nailing of hives: but I want to say that there is also a great difference between well-nailed painted hives and the best-nailed unpainted ones. The paint should be put on just the same.

* * *

Locality does not have so much effect on some things as has been claimed, it seems. For instance, I remember a good many times when our bees were just as cross toward the end of a good honey-flow, and with honey still coming in "at a good clip," as Dr. Miller quotes Dr. Ludden, p. 163. It seems that, when the hives have been stored full of the golden stores, the bees are the more determined to protect them against any possible intruder that may come along and deprive them of these after the long hard toil of storing. It has often seemed to me that a colony of bees that has its hive exceedingly well filled with honey is more difficult to handle at that particular stage than under ordinary conditions. This has come to my notice several times with colo-

nies that ordinarily behaved very nicely and did not seem to repel our manipulations as when we approached the hives to take away the surplus honey toward the end of the honey-flow.

* * *

Keeping bees within the city limits has been defended by the writer in a number of instances, and our own number of colonies has ranged from a few to forty and more colonies right in the heart of this city of some four thousand inhabitants. While we have had no trouble on account of their presence from neighbors and others, we have decided to move them all away to a safe distance to prevent them coming back and loitering about the honey-house as they now do. In this respect they have annoyed us a great deal—so much so that we moved all of them away once before. But the fact that various colonies and nuclei can be picked up here and there at different times, and can be more conveniently cared for at home, this number has again increased to a dozen or so. The annoyance about the honey-house and the honey-wagons, and every thing else, is so great that we prefer not to have them about. It is true that "the other fellow's" bees may come just the same; but with ours out of the way the number will be decreased appreciably.

Conversations with Doolittle

Continued from preceding page.

evening weight showed a gain of 8 pounds and 2 ounces in excess of that in the morning, so I had guessed within ten ounces of what had really come in that day.

But I think I hear our questioner asking "What has this guessing-bee to do with practical apiculture?" Well, it had a lot to do with me, for it brought to me the joy and fun that was to be found with the "trade" called "apiculture." Very few indeed have made a practical success in life where they entered any trade or calling with nothing in view but the money there was in it. When toiling for the dollar, every thing is drudgery. But when a person loves his calling so that he is eager for the next day's fun, every night as he lies down to sleep, he not only gets the joy and fun, but money as well.

GENERAL CORRESPONDENCE

OPERATIVE COSTS; THE FREQUENT WASTE OF TIME AND LABOR

BY ARTHUR C. MILLER



Arthur C. Miller

In the Jan. 15th issue, page 50, I tried hard to bring home to the readers some of the economics of bee culture, using the new method of queen introduction as the vehicle to convey my ideas. I rather flattered myself that I did very well, and thought I said things in such a manner as would set some of the beekeepers to thinking, and to considering the cost of some of their methods. In fact, I felt quite sure that I had so carefully expressed myself that there would be no missing the message I wished to give.

The editor gave it a kind notice in his department; but as he seems to have been so interested in the percentage of queens lost that he quite missed the matter of dollars and cents, I fear that I was not as clear as I thought. The editor also slipped up in his percentage figures, as I think I can show. He says the loss by the cage method in his yards is 10 per cent, and that by two of the most expert queen-handlers in the country. Then he says that of 100 queens sent to a customer, the latter lost 10 per cent; and it was right there, I fear, his arithmetic gave out. He lost 10 per cent, the customer lost 10 per cent of the same lot of queens, and ten plus ten makes twenty. But of all the queens he produced he had only 90 per cent left to sell; so, to be really accurate, his customer lost but 10 per cent of 90 per cent, or 9 per cent—total, 19 per cent. But that isn't correct, though it may appear to be; for if his loss was 10 per cent, then he must have lost one of the extra ten he bought; so the real shrinkage on the original lot of queens was 20 per cent. Now that, mind you, was by experts.

When I said the loss by the cage method was about 40 per cent, I based my statement on answers to queries, on testimony picked up when inspecting and by personal experience. If you choose to pull in the poor beginner by the scruff of his neck you will find his loss will average nearer sixty than forty per cent.

Whatever the editor does with my figures, he must double his own. He based his on

experts, while I based mine on all classes, which, from the lesson I was trying to teach, was the proper basis.

Accepting the loss of twenty per cent by experts as the correct one for the commercial beekeepers, and leaving the novice and amateur out of the question, we still have a startling money loss by the cage method of queen introduction. If memory serves me aright, the editor's output of queens is about 5000 annually. For the sake of easy figuring, we will use the retail price of untested queens as the unit price, to wit, \$1.00. That means \$5000 worth of queens. Of this he confesses to losing 10 per cent by the cage method of handling, or \$500. His customers lose an equal amount—a rather serious loss on a \$5000 business, eh?

Now figure the loss to all the beekeepers of the country, and set it over as one of the overlooked costs of honey production.

But two other items he has quite overlooked—the labor (*time* used by the beekeeper in the cage plan of introducing and subsequent inspection, etc.), and time colonies are without a laying queen, and the consequent upset and indirect loss. To be sure, the thoughtful man does his requeening when this latter is trifling; but it must be reckoned, be it large or small.

If the method of requeening without dequeening proves successful, we may save the time of hunting up the old queens, and another very large cost item will be removed.

In other words, beekeepers are more wasteful of *time* and *labor* than they have the slightest conception. By some of the most popular and most widely taught methods of bee culture it costs as high as \$5.00 and even \$6.00 per year merely to handle each colony of bees. It costs the best of us, when using our brains all the year to save us labor during "the season," approximately \$2.00 a year to "handle" our bees. Under exceptionally favorable conditions the cost has been lowered to \$1.00 per year; but I believe \$2.00 to be much below the average, and am supported in this view by some careful investigators.

In the term "handle" I include all the expense of keeping and operating a colony of bees, such as interest, taxes, depreciation, insurance, and labor. Supplies, such as sections, super foundation, hives for swarms, etc., are no part of *operative* cost.

A man with sufficient ability to operate a commercial apiary successfully and profitably market the crop, should be able to earn at least \$5.00 per day at any one of several other lines of business, so I used that figure on a ten-hour day, or 50 cts. per hour as time value in apiary work.

If some of the advocates of thorough spring overhauling, of stimulative feeding, of building up weak colonies, and of the hundred and one other needless and worse than needless operations, will just keep account of the actual time used in the apiary for one season, they will be staggered at the total.

It will not take much thinking to estimate the *hours* given to each colony in a year. You can figure it by taking the total of days the owner and his helpers spent at it and dividing it by the number of colonies; or if the beekeeping is a side line, and attended to at odd moments, it is not difficult to determine how long each operation takes.

Hunting up the old queen and getting in a new one takes perhaps as much time for the average beekeeper as any part of the work, and for that reason I used it to illustrate what I had to say on economics.

If beekeepers had devoted to operative costs a small part of the time and thought they have given to supply costs they would have profited immeasurably. It is well to keep cost of equipment as small as possible, that interest charges and depreciation may be less; but in trying to force supply costs down, there is danger of getting such poor goods, etc., as to result in ultimate serious loss. Within certain limits it is wise to put quite a sum into the equipment provided the annual operative cost is thereby reduced. If the increase in prices of supplies serves to turn the beekeeper's thoughts to the economics of his business, it will be worth much to them. I would go even further, and say that I think the rising price of supplies a blessing, for it will deter many persons, who are not financially able to enter the beekeeping business, from undertaking it; and it will gradually crowd out those who are poor managers, always short of cash, and always hurting the honey market by sacrificing their crops.

Devote your thoughts to the expenses of operation, and let cost of supplies alone for awhile.

Providence, R. I.

[Try as hard as we may, it is not always easy to make the other fellow understand just what we mean. If we missed the point that our correspondent was making, it is apparent to us, at least, that he did not entirely get *our* point of view as to the

actual loss by introducing on the cage plan. If we *introduced* 5000 queens in our apiary, and the loss from the cage plan were 10 per cent, then if the other fellow who bought them of us should lose 10 per cent in introducing, it would be proper to add the two percentages together, and thus make the 20 per cent loss. Mr. Miller is correct when he says we reared 5000 queens. We actually did better than that. But there was only a very small percentage of fertile queens that were *introduced* into our yards—probably not one per cent of the number reared. On this basis there would be 99 per cent that would have only *one* introduction instead of two; therefore the percentage of loss on the part of the expert would be, as we figure it, not higher than 10 per cent. But possibly our correspondent was figuring on the loss in introducing *virgins*. If he figured that way, then we shall have to confess that the loss by introducing on the cage plan would go away beyond 20 per cent.

Mr. Miller says that a man with sufficient ability to operate a commercial apiary successfully and profitably, and market the crop, should be able to earn at least \$5.00 a day at any one of several lines of business. He then figures on a ten-hour day, and operating expenses 50 cents an hour for apiary work. As a general thing, one good man can furnish the brains for half a dozen or a dozen men or boys with an abundance of muscle and a little experience. Said an old and successful beekeeper the other day, "I can hire all the men I need, and some pretty good ones, at \$1.50 a day; but, mind you, *I* furnish the brains. They do the work." Ordinarily we would say that 15 cents per hour is a low figure; but 20 to 25 cents will usually buy a pretty good man in the capacity of operator to work on general plans supplied by the boss. Mr. R. F. Holtermann goes one better. He hires student help every year, pays them so much a month and board, and a percentage on what the season develops. His labor item probably would not exceed 15 cents an hour; but his own time is probably worth 50 cents or more per hour. If we suppose that the average man who operates 1000 colonies is capable of bossing five or six other men, the relative cost per hour would be reduced in proportion. For example, five men at an average price of \$2.00 per day would earn \$10.00 per day. The bee-man himself would make this \$15.00, furnishing the brains and doing some of the labor. The operating expense of the six men then would be \$2.50 a day, or 25 cents an hour. Perhaps this is what Mr. Miller has in mind.—Ed.]

REQUEENING WITHOUT DEQUEENING

BY J. E. HAND

On p. 851, 1913, J. B. Merwin outlines a method of requeening without removing the reigning queen. This article introduces a subject that has been discussed pro and con in the journals with the unanimous verdict that, while bees will tolerate a plurality of laying queens or queen-cells, acting on the principle that "to the victor belong the spoils," they will not, as a rule, tolerate a virgin queen at mating age in the same colony with a laying queen of any age, unless she is actually failing, even though separated by a queen-excluder. There are exceptions to all rules, however, and undoubtedly friend Merwin's case is the exception and not the rule. Some 20 years ago Mr. Doolittle became quite enthusiastic about rearing queens in a hive having a laying queen, the bees having access to both compartments, but was compelled to abandon the project because a large majority of the virgins were either killed or driven from the hives by constant nagging and worrying by the bees as the queens arrived at mating age.

Viewing it thus, it is safe to assume that friend Merwin's success was due to one of two conditions—either the laying queens were actually failing or weak, or else an unusual honey-flow had a soothing effect upon the disposition of the bees temporarily; for many manipulations can be performed with bees at such times that would result in

disaster during a dearth of nectar. It is generally conceded that a plurality of laying queens are safe in any hive until they happen to meet when both are in fighting trim, which may not take place for several days, or even weeks. This gave rise to the false theory that any number of queens would co-operate peacefully in the same hive if the bees would accept them. The late E. W. Alexander became very enthusiastic about it; but nature asserted her power, and the queens fought in mortal combat until but one remained, and the theory was exploded.

It strikes me that the method of requeening without dequeening, as outlined by A. C. Miller, page 850, gives promise of ultimate success when operated in conjunction with the smoke method, for the reason that a queen on arrival by mail is slim and active, while the reigning queen is sluggish and corpulent; hence if they meet after the bees have become reconciled to the new queen the chances are all in favor of the new queen. But the chances are even that they will meet while the bees are still viewing the new queen with suspicion, in which case the bees would undoubtedly decide the contest in favor of their recognized monarch. This contingency could be easily provided against by using a division-board between them for two or three days.

Birmingham, Ohio.

REQUEENING WITHOUT DEQUEENING IN NEW ZEALAND

A Duel Between Two Queens

BY N. SMEDLEY.

In the December 1st issue, 1913, page 851, is an article on requeening, by J. B. Merwin. This is a step in the right direction, and will prove a cheap and safe method of requeening. I have just tried it with 100 hives. In some cases where cells were already started, I grafted these without caging the queen, and they were accepted and drawn out to fine cells. This copy of GLEANINGS came at the right time, as I was thinking over this requeening problem. I was killing the old queens and grafting what cells I found already formed. Any found queenless would receive a laying queen from another hive, and the hive the queen was taken from would be grafted. The queen's wings are clipped. Killing these queens in the middle of January (in my locality), I

consider is no loss; for by the time the last of the eggs are hatched out the honey-flow is about done.

I have also tried the smoke plan of introducing virgins; but the virgins were not successful in ridding the hive of the old queen, but they were accepted in every queenless hive. I had a one-frame observatory hive with a laying queen. Toward evening I ran in a virgin queen. She passed the guards, and I watched her climb up the frame. The bees took no notice of her. She went among them quietly and seemed at home; but presently she came to the queen of the hive, and they fought immediately, rolling down the frame locked together, on to the bottom-board. Now, here is the point: As soon as these queens started to fight,

the workers rushed down upon them and separated them and killed the virgin.

SWARMS ENTERING HIVES OCCUPIED BY OTHER BEES.

I should like to know if you have ever known the following to happen: I was working in an outyard of 55 colonies at swarming time. A swarm issued from a three-story hive at one end of the yard. I hived it in a box and set it to one side, as I wanted to finish with the hive I was working at. About five minutes later a second swarm came out lower down the same row of hives. This was a good after-swarm. At this time I had finished my work at the hive mentioned, and stood waiting for this swarm to settle. To my surprise it went into the hive that had just swarmed, the swarm being still in the box. I went to this hive and watched them going in. Presently a virgin queen alighted on the front board. I caught her and killed her. I destroyed all queen-cells but one in this hive, and the bees went to work a week later in another outyard. In working through this yard I came to a hive ready to swarm. The queen's wings were clipped and the cells cut out, but I found afterward I missed one. Half an hour later this hive swarmed. I picked up the queen and caged her, and was pre-

paring to receive the swarm in a prepared hive when I noticed them entering two hives about twelve yards away. One hive stood in front of the other. One of these hives had swarmed earlier that day. The other was a division from a strong hive earlier in the season. There were no bees returning from the swarm to their hives, or at least not enough to be noticed.

Te Awamutu, N. Z., Jan. 31.

[The occurrence of swarms going into other hives that have just swarmed, while not common, have been reported from time to time. We do not know how to explain them, unless there are a few stragglers from the swarm that are returning to their old home. These attract the bees of any other swarms that may be in the air with the result that such bees go in the hive just vacated. If cells are destroyed there is no reason why the two households can not unite as one family.

Your account of how the bees took a hand in the queen fight is interesting. It shows that they do sometimes interfere in behalf of one of the queens. There is evidence that at other times they do not meddle in the row. We should be glad to get any other facts that have actually been seen.—ED.]

SOIL FERTILITY AND HONEY PRODUCTION

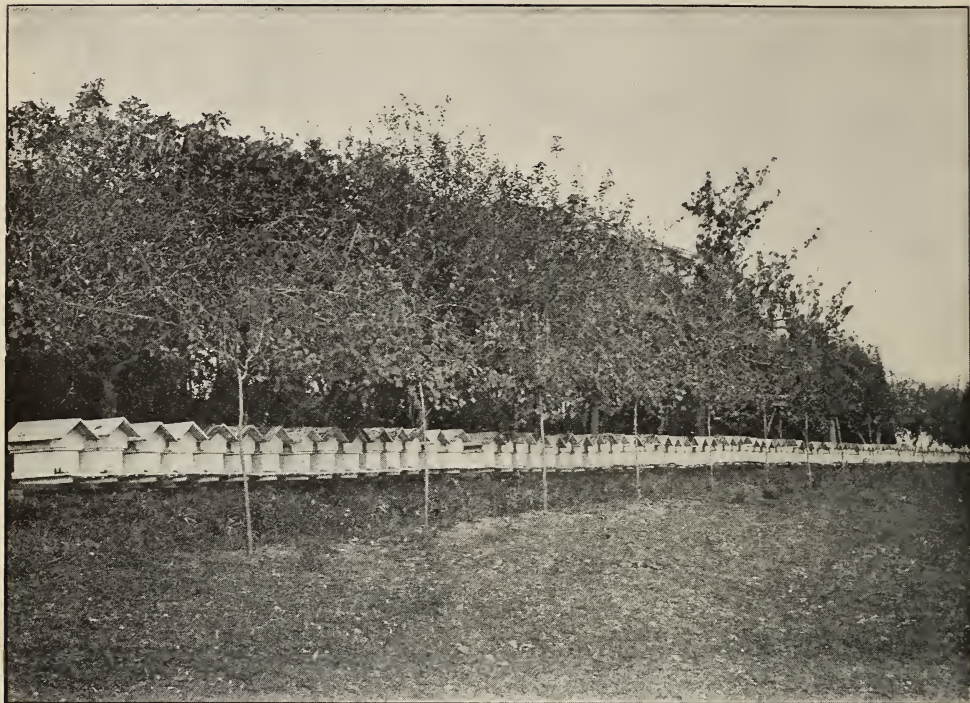
The Value of the Clovers for the Purpose

Paper presented by Prof. H. A. Surface, of Harrisburg, Pa., at the convention of the National Beekeepers' Association in St. Louis.

It is generally agreed that we can not afford to plant for nectar or honey production alone. In other words, to sow a field to any kind of crop, merely for the sake of the honey it might produce, is scarcely profitable. If, however, the field crop can be made a successful primary feature, the factor of honey production as a secondary feature may be entirely clear gain, as most profits come from comparatively small things. We note, for example, that the packing-houses of Chicago utilize absolutely every part and by-product of the hog excepting the squeal, and it is now proposed that they utilize that in making phonographic records to aid the old-style noisy beekeepers in making more noise to help hive their bees.

In this day of keen agricultural competition every factor possible should aid the husbandman. Natural conditions are against success from continued cropping or from the old-style farm methods. It becomes necessary to keep up with the times by

adopting such new methods as the scientific experts show are beneficial. It is impossible for any husbandman to succeed without considering as an entire unit all the factors that enter into modern agriculture. I mean to say he may be up to date in many things; but if not in all, he may fail. For example, he may select seed in accordance with the methods of Holden or Hunt; he may fertilize in accordance with the latest directions from Hopkins or Thorne, and may cultivate according to Hilgarde, and spray according to Gillette, Forbes, or to Howard; but when the crop returns are to be sought he must see the "handwriting on the wall" or hear the saddening statement that was heard by the rich young man who went to Christ, "One thing thou lackest." This is organic matter with soil fertility. We can not afford to buy enough commercial fertilizer to depend upon it entirely, year after year, as a sole source of plant fertility. It will eventually make a rich man poor. We do not have enough barnyard manure to



We have been favored by a visit from Mr. C. P. Dadant, as well as the Viscount Triaca, of the *Apicoltore*; Mr. Herrod, the Secretary of the British Beekeepers' Association, and Prof. Cotini, Director of the Italian Federation of Beekeepers. We have taken some photographs, which we are sending you, together with one of our apiary and of our Director, who is also instructor at the Royal Agricultural School at Imola. Castel San Pietre, Bologna, Italy, Dec. 5. GAETANO PIANA.

meet the needs of our extensive agriculturists or horticulturists. How, then, can a poor man increase his yield by economical means? This is a question of such far-reaching importance as to justify our attention for a few minutes, even though at first it may be beyond any thing pertaining to beekeeping, and apparently inappropriate before this assembly.

Let us remember that the greatest element of plant food is that which is commonly called "nitrogen." It is by all means the most expensive element in our commercial fertilizers, and the most difficult to get into the soil by artificial means. At the same time, it is the most abundant element in the atmosphere. Practically eleven pounds of this material rests upon each square inch of the earth's surface. Why is it not directly utilized? It is because it must be made over or transformed into the kind of compound that can be taken up by plants. An illustration is to be seen in the lowly field bean. In its raw state it will scarcely sustain human life; but let it be properly cooked, and there is no more nourishing article of food for mankind. Thus, when the nitrogen in the atmosphere is trans-

formed it becomes at once the most stimulating or invigorating element in the food of plants.

How is this transformation effected? Here is the important point of our story. This is done in nature's laboratory by myriads of organisms known as bacteria that live in a mutually beneficial relationship, known as symbiosis, upon the roots of the legume plants. These are the members of the pulse or pea and bean family, botanically known as *Leguminosae*. Upon the roots of all members of this family these beneficial bacteria, gathering and transforming nitrogen, live in great numbers, forming little lumps or nodules. Upon practically each kind there is a different species of bacterium, as is shown by the fact that the nodules taken from the roots of different kinds of legume plants differ in size, shape, color, and general appearance. These nodules, or lumps, are large enough to be seen readily by the unaided eye. Take up, for example, the roots of the common white clover, sweet white clover, the red clover, crimson clover, alfalfa, the locust-tree and the redbud-tree, keeping the surrounding earth with them until they are



A more distant view of one of the apiaries of Gaetano Piana, Castel San Pietro, Bologna, Italy.

placed in water and very gently washed to avoid breaking off their most minute fibers. Note the small white, pinkish or brownish lumps that are there to be seen. These are the nodules which are homes of myriads of bacteria which are plainly seen when any lump is crushed under a compound microscope of high power. Not only are such lumps the homes of bacteria, but they are composed almost entirely of available nitrogen, transformed from the unavailable nitrogen of the atmosphere by the vital action of these microscopical organisms, and thus rendered fit for immediate use by the plants upon which they grow, as well as by other plants that may be grown in the same soil. Therefore, it can be seen that, the more of such legume plants are grown in any soil, the more fertile will the soil become from the standpoint of increase of nitrogen and organic material therefrom.

As the plants mature they draw upon the nitrogen stored in the nodules on their rootlets, using part of it in the formation of tissue, especially seeds.

A bulletin just at hand, No. 145, from the Agricultural Experiment Station at Brookings, S. D., says, "Every ton of clover hay takes 40 pounds of nitrogen from the air, and every ton of alfalfa takes 50 pounds from the air through the roots of

these plants." Hence by growing these crops, or other legume crops, and returning them to the soil, either directly or after they have been transformed into manure, a supply of nitrogen in the soil may be maintained, provided, of course, that sufficient amount of legumes are grown.

So much for the primary story of increasing soil fertility, which is really more important than increasing the size of the farm. Now, there is a secondary point for consideration, which, for us as beekeepers, is of no small importance. This is the fact that, among the very best honey-producing plants of the world, are the legumes. In connection with crimson clover and locust-blossoms in the spring we have a close succession of alsike, white clover, sweet yellow clover, alfalfa, and sweet white clover, all of which the honey-bees work on to a very remarkable extent. Every one of these legumes here mentioned is of great benefit as a soil renewer, and at the same time they are recognized as being the chief honey-producing plants of America, with but few exceptions.

Another important point of the story is that, in addition to being soil-renewers and nectar-yielders, they are our greatest forage-plants. No plants contain as much protein, or are as beneficial as feed for live stock,



Mr. C. P. Dadant at G. Piana's apiary, Bologna, Italy.

The energy of the workhorse and the yield of milk from dairy cattle, increase when these plants are used either as pasture or hay. The growth of pork is greater when these plants supplement the grain feeds. The production of eggs is increased by their proper use in the poultry-yard, and, in fact, there is a report of a banquet of Western growers in which one of these plants (alfalfa) furnished not only bread and vegetable food, but also a food used as breakfast cereal.

To get the benefits of such plant growth for the beekeepers it is necessary that they bloom, and that the bees have opportunity to visit the blossoms. This means they should grow at least until the blossoms are commencing to fade or wither. It is known that the heaviest nectar secretion is just at the time of the opening of the bloom. After a flower has been visited by a bee, and fertilized, the secretion of nectar stops and the blossom fades and drops. Here again, good agricultural practice is in accordance with apicultural profits. It so happens that the best results for hay or stock food are obtained by cutting just before the seeds form, which is just after the blossoms have passed their stage of perfection and are withering; also, when these crops are to be turned down for soiling crops the best results are obtained by plowing them down when they reach this same stage

of perfection of development. To plow down a great crop before blooming means to put into the ground too much water in the form of thin sap, and it is supposed there is special danger of souring the soil then. The juice in a plant commences to become thick and sticky after it has passed the important vital period of full bloom. That is when it can be turned down with safety, and is also the time when

it has done its greatest work in transforming and fixing nitrogen; but let it be remembered that the fertility is not lost by using the plant as stock food. If the manure, liquid and solid, is saved and returned to the field it will have as great fertilizing value as though it had been plowed down, and the grower will have the increased benefit of its feeding value for his live stock.

From the further standpoint of the greatest fertility from the nitrogenous nodules it must be remembered that their best stage of perfection is reached when the plant is at its highest point of development, or just at the end of blossoming and the beginning of the ripening of the seed. Thus whether the plant be plowed down, or cut for the silo, or dried as hay, the best results for honey production, for soil fertility, and for animal food, are to be obtained by letting them reach a fair stage of development or perfection rather than cutting, as is the



Mr. Dadant, with Viscount Triaca, of *L' Apicoltore*; Mr. Herrod, of the *British Bee Journal*, and Prof. Cotini, of the Italian Federation of Beekeepers, at the Piana apiary.



Bees of D. M. Bryant, Ethelfelts, Va., working on rye chop as a substitute for pollen.

fault of so many husbandmen, before the blossoms open.

It becomes important, therefore, for every one interested in the tilling of the soil to see that a definite effort is made to plant legume crops at every opportunity. They can be used as filler crops at the time of year when nothing else is grown, as, for example, by sowing crimson clover just before the last time the cultivator is run through the cornfield, and growing a sod until the next spring. Last year the writer sowed three quarts of crimson-clover seed and half a pint of cowhorn-turnip seed to the acre in a cornfield; and after the corn was harvested he removed tons of the best turnips for cow food and table use, and at the present time has a good clover sod on what would be otherwise only barren and stubble. The time has come when it must be regarded as slothful for a man to leave his soil without a clover crop as we formerly regarded it for a careless person to leave his implements exposed in the field during the winter. From this crimson-clover sod, next May will spring a wealth of scarlet bloom, looking like a field covered with ripening strawberries, and humming with the busy bees in the swarming season.

It must be remembered that the legumes are averse to thriving in acid soils. The

soil wherein they are to grow should be sweetened by the use of at least one ton of lime or one or two tons of finely ground limestone per acre, before seeding. In the case of the corn, this can be done by spreading the lime broadcast just before planting in the spring.

Soil inoculation is one other important point in order to be sure of an abundant growth of the soil bacteria and nitrifying nodules, and, consequently, the legume growth. This can be effected best by sowing broadcast two or three hundred pounds per acre of soil taken from a field which has previously grown the legume crop that is to be planted.

Another means of inoculation is to sow the crop and let it reach fair maturity, or even go to sod again on the same soil. Then turn it down and seed again. After two or three repeated efforts on soil where lime has been used to prevent acidity, there will be an inoculation which will result in a good growth in the future. A third proposed means of inoculation is through commercial cultures prepared by different commercial concerns, and sent by mail. This is the most expensive and least satisfactory means of inoculation. As a rule, we do not recommend it. The best means of inoculation is by sowing soil from the field that has grown

the crop desired. Apply it in the evening or on a cloudy day, just before sowing seed, and harrow in both soil and seed.

While as a rule each legume has its own kind of bacterium, yet there are exceptions, as, for example, in growing sweet white clover to produce the inoculation for alfalfa, as in this case the bacterium is the same. It is to be further remembered that the legumes have their own proper or best respective seasons for seeding, and the one to plant at any time of year depends upon the time of year when the ground is available for said planting. For example, we sow red clover and alsike in our grain-fields in February, when the ground is honey-combed with frost. Just as early as the soil can be worked in the spring we sow Canada field peas, with or without oats. A few years ago in our own fields we drilled Canada field peas, oats, red clover, and alsike, and had a good stand of the three

legumes on the soil, so that, as the peas and oats were cut, the clover-field remained. Later in the spring, and just after corn-planting, is the proper time for planting cow peas, soy beans, and field beans or soup beans. In midsummer is the best time for sowing crimson clover, and in the early part of August is the proper period for seeding with alfalfa. Later in August, or early in September, we sow hairy or winter vetch, either with or without rye, but prefer one peck of vetch and two or three pecks of rye to the acre to give one of the best crops that can be used for a winter-cover crop for renewing soil fertility, and also keeping the bees busily and profitably engaged.

In conclusion let me say that the man who learns how to use one or more legume crops in each crop rotation, and keeps the legume always on his ground as a cover crop, will have honey in his hives and money in his bank.

ONE HUNDRED AND NINETY COLONIES IN A VILLAGE

BY L. F. HOWDEN

Our apiary is located in the village of Fillmore, and contains at present 190 colonies. We have had very good luck with our bees, having produced as much as five tons of comb honey in a season, the average usually being 50 to 60 lbs. per colony.

We are using double-walled hives, and will transfer the 40 colonies on the other side of the fence this spring, as we have had several failures with single-walled hives.

We have not lost a colony in our double-walled hives so far this winter.

The bees have been located two years as shown in the picture. They were formerly kept on our farm three miles from Fillmore. The instances are very rare when they have stung people, and I haven't heard of a single complaint. No one ever tried to make out that they are a nuisance.

The picture was taken from the Pennsyl-



L. F. Howden's apiary of 190 colonies in the village of Fillmore, N. Y. Photographed by C. A. Blastein.

vania Railroad bridge, located about four rods from our apiary. Our principal sources of honey are alsike, clover, white clover, and sweet clover; also fruit-bloom, bass-wood, and buckwheat.

Fillmore, N. Y.

[Is there another apiary of this size

located within the corporate limits of a village? An apiary of nearly 200 colonies "in town" is quite rare, although apparently in this case the bees are just outside the main part of the village. We expected to use this article in our March 1st issue, but it reached us too late.—Ed.]

DO BEES SPREAD PEAR AND OTHER KINDS OF BLIGHT ON FRUIT TREES?

If So, is the Damage More than Offset by the Good They do?

BY CHARLES B. PIPER, M. D.

I am enclosing a communication received from Mr. Jackson, of the Experiment Station, Oregon Agricultural College. I had written to him about the possibility of the dissemination of blight by bees, and place before you what he has to say on the subject.

I have also perused Circular Bulletin No. 7, Crop Pest Series No. 1, "Fire-blight of Pear and Apple," by Prof. Jackson. The strongest statement in this publication is found on page 9. The statement is, "The fire-blight germs are naturally disseminated chiefly by insects at blossoming time. As noted above, active hold-over cankers exude a sticky ooze, attractive to insects, in which the bacteria are present in enormous numbers, and any insects visiting such cankers will become covered with the germs. If, after becoming infected in this way, they visit the blossoms for nectar, they inoculate the flowers, whereupon the germs find an easy access to the inner tissues of the blossoms through the nectaries."

Leaving this publication for a minute I would quote from Circular Bulletin No. 20, from the same Experiment Station, "The Pollination Question." On page 5 I read, "Probably 99 per cent or more of the transfer of pollen is done by insects. Prime among these may be mentioned the honey-bee. Bumble-bees, ants, flies, and short-tongued bees play an important part. However, there is no doubt that the common honey-bee is by far the best of all, and it will pay every orchardist to have a few stands among his trees."

Realizing as I do the great menace to our orchards of fire-blight, it is naturally somewhat disquieting to think that honey-bees among my fruit-trees would be instrumental in disseminating blight. At the same time, we are all convinced of the value of bees as pollenizing agents, and it is a problem to determine at this time whether we shall do without the bees as pollenizers, and in a

measure protect our trees from this dreaded blight. I am endeavoring to collect all the information possible, and have thought that you might possibly have some opinions gleaned from wide reading.

I have an orchard of twenty acres in the Bitter Root Valley, Montana, in which I have hoped ultimately to keep possibly 40 or 50 colonies of bees. At the present time I am undecided as to whether it might be a good procedure. That western country is undeveloped; the apiarists are usually unskilled and not up to date in their methods, and I believe that a good field presents itself to a person of intelligence and industry. However, I wish to be absolutely assured of the wisdom of any move before making it.

Milwaukee, Wis.

[The letter from Mr. Jackson is as follows:]

Our Crop Pest and Horticultural Report, dealing with many other important subjects than the one you mention, and our circular bulletin No. 7 on fire-blight, have been sent you. I would say that there is absolutely no doubt but that bees carry fire-blight, as all authorities who have worked on this disease agree. It is partially this that makes the disease so difficult to handle, since cross-pollination is so necessary, and we can not use any methods which would prevent pollination.

Corvallis, Ore., Feb. 2. H. S. JACKSON.

[You need not fear fire-blight, pear-blight, or twig-blight to any great extent. There are certain seasons when all phases of the blight are worse some years than others. A few years ago pear-blight was giving a great deal of trouble on the Pacific Coast. The pear-growers demanded that all the bees be removed from the immediate vicinity, and it looked as if there were going to be a war between the fruit-growers and the beekeepers. At that time I was President of the National Association, and as such I went into the territory to study the matter. I knew that bees were very necessary for the proper pollination of the pear-blossoms, and I felt very sure that, if



Part of A. J. McClanahan's 240-colony apiary near Payette, Idaho. This view shows over half of the yard. Part of the other half is shown on the cover of this issue.

the bees were removed, the pear-growers themselves would be the first to have them come back. I accordingly recommended that the beekeepers remove their bees from the vicinity of the pear-trees. This was done. But the very next year, and the year following, and from that time on, the pear-growers have asked the beekeepers to place their bees as near their pear-orchards as possible.

While we have to admit that bees *can* carry a blight of any kind, as they carry pollen from blossom to blossom, yet the good they do more than counterbalances the damages they do at certain seasons. To remove the bees because there was twig-blight, pear-blight, and fire-blight, would not help matters very much, because there would be wild bees and common ordinary insects that would scatter the blight just the same as it did in California after the tame honey-bees were removed. The only thing to be done is to get as many bees around the pear-orchard as possible because bees are almost indispensable for the proper pollination of a good many varieties of apples, pears, peaches, and certain stone fruit.

Prof. M. D. Waite, of the Department of

Agriculture, went into this matter very exhaustively some years ago, and his decision was most emphatically in favor of the bees in spite of the damage they might do in certain years in carrying blight.

You doubtless would be interested in the last report of the Massachusetts Fruit Growers' Association of 1914 that was held at Springfield, Mass. If you have not seen this I think you would do well to send for a copy. I refer you to Harold L. Frost, of Arlington, Mass., or to F. Howard Brown, Secretary and Treasurer, at Marlboro, Mass. While this does not have much to say concerning the blight question, it does have some very important testimony on the value of bees as pollinators of fruit-blossoms.

I am also sending you our booklet, "Bees and Fruit." You will find further information under the subject of "Apple-blossoms" in our A B C and X Y Z of Bee Culture.

A couple of weeks ago I talked with Mr. Charles Repp, of the famous Repp Brothers, of New Jersey, the largest apple-growers, probably, in the United States. Mr. Repp told me that the more bees they could have the better, and that the question of blight didn't cut very much figure with

them because they knew they must have the bees, and the matter of blight was a small item.

You, as a practical fruit-grower, know, of course, that the first thing to do when a

blight shows itself is to cut it off. Of course, if ordinary apple-twig blight shows up you can not very well do this; but this will last but the one season, and next year it will disappear probably.—E. R. Root.]

A 240-COLONY APIARY IN IDAHO

BY A. J. M'CLANAHAN

The photograph of the 240-colony apiary shown herewith is one of my out-yard 27 miles from my home at Payette, Idaho. It is located near the Owyhee River in Oregon, 7½ miles from Nyssa.

I run my bees altogether for comb honey. I am not genius enough to be an inventor, so I take all of the best bee-journals and keep myself posted on the very latest methods of procedure. I try in a small way whatever I think would be an improvement. If it proves better than my old way I use it; if not, I discard it. In this way, therefore, I lose no time in trying to invent new appliances.

I use a super that measures 17 1-16 inches, inside measure, and use loose section-slats without end-pieces, which make slats

easy to clean and store away in winter. I use only the 4¼ by 4¼ beeway sections.

I still stay by the old bottom-board as made years ago, with ⅜-inch opening, and not reversible. I find our climate too changeable for very wide entrances in comb-honey production. Our surplus-honey yields are not as good as they were a few years back, on account of so many colonies shipped in from Colorado the last few years. Some have not been as careful as they should have been about the rights of those who were here before them. Ada Canyon and Washington Co., in Idaho; Malheur Co., in Oregon, all locations for apiaries, are taken up; but if one wants to come here and locate he can easily find apiaries for sale already located; and beekeepers

here would make them welcome. I shipped the first car of honey that was ever sent from Payette Valley, 12 years ago, to Spokane, Wash. Now we ship from 10 to

17 cars of comb and extracted honey per year. Our average is from \$2.00 to \$6.00 per colony, spring count.

Payette, Idaho.

THE ACT OF AN OUTLAW; HOW BEES MAY BE A NUISANCE

BY THE OUTLAW

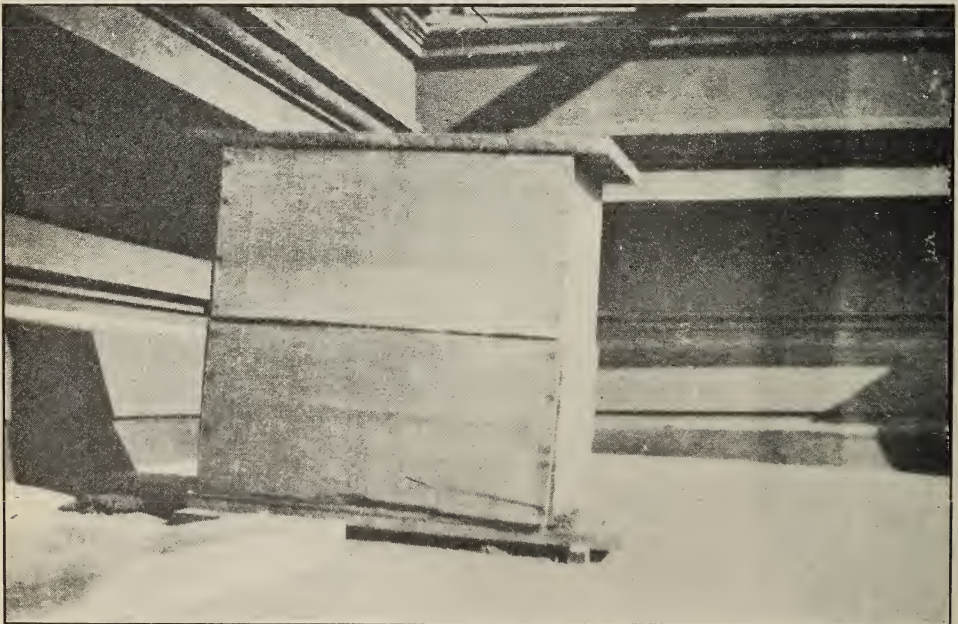
Continued from the March 15th issue, page 222.

With apologies to the Bard of Avon—the question was, to do or not to do; would it be better for the soul to submit to the humiliations and indignities of an outrageous city ordinance, or take up arms against such adverse legislation and attempt to overthrow it? or, as an alternative to both the foregoing lines of procedure, to continue to violate surreptitiously the orders and mandates of the city Solons—in effect, avoid all issues and follow the example of the natives of Kentucky and produce moonshine honey. Well, the Kentucky method was decided upon; and the result was that one bright morning the bees found themselves in a secluded niche on the roof, and there they are to-day.

To those who are unacquainted with conditions where there are ordinances prohibiting the keeping of bees within certain jurisdictions, it might be well to state that in certain parts of the country it is customary to find that there is a city ordinance

prohibiting the keeping of bees within the limits of the town or city. Especially is this true of California cities. The reason for such ordinances, and there is a reason and a valid one, is the fruit industry. While the bees are very necessary to the pollination of fruit, they are also capable of making themselves considerable of a nuisance during the packing and drying of the fruit. To illustrate the manner in which bees are a nuisance, I will tell a story as it was told to me by an extensive producer of honey. He lives in a small town in the San Geronio Pass. The town is situated in the center of several thousand acres of fruit, consisting of prunes, pears, peaches, apricots, etc. The surrounding desert and mountains are his bee territory. The pasturage consists of sage, catclaw, alfilarie, and what is commonly known as wild buckwheat. His story is as follows:

"It was in the 90's, the time we had the three bad years. The third season I was in



The Outlaw's bees permanently established in a niche of the roof.

about as bad shape financially as the bees. Well, I did not see how I could buy sugar to carry them through another season. Still I did not want to see them starve, so I decided to bring the remains of my three apiaries to town and give them the advantage of the fruit-bloom. This I did. During the bloom the bees did well, making a living and a little more; but in the fall, when the fruit-drying season commenced, it brought trouble. The first intimation I had was when I was summoned to the place of one of the fruit-dryers. This



Gum-trees (eucalyptus). The two trees to the right in the foreground are regular gums; the one to the left is a blue gum.

dryer had about half an acre covered with trays of drying fruit; and when I arrived I found that the trays were literally covered with bees. Not only did the bees visit the fruit on the trays, but they also took an interest in the fruit that was being prepared for the trays, and two or three of the girls got stung on the hands, causing the working force to become demoralized. The result was that, within a few days after the commencement of the fruit-drying season, I decided that the best thing to do was to move my bees out of town. But the matter did not end with the removing of my bees, as the fruit-dryer claimed that, with every drop of juice that the bees removed from the drying fruit, they took a certain amount of sugar; and every thing that the bees got that was of use to them was to the direct loss of the fruit; that where the bees obtained a pound of sugar, the fruit was in consequence a pound short in weight, and this I am inclined to believe was true, and I later agreed to recompense him for the probable loss."

There is another matter to be observed in the keeping of bees in cities; and that is, to see that they are not situated in such a position that people who are unacquainted with bees are apt to run afoul of them and be perhaps seriously stung. For the benefit of those who contemplate city beekeeping it might be well to state two instances that occurred during the time my bees were situated in the garden. The first instance was when a young lady in a nearby house wandered out one bright sunny morning to dry

her hair and sat down in the grass directly in front of the hive, and about two feet from the entrance. She knew nothing of bees, and might have been seriously stung had she not been warned. The other instance was when a child of some four years wandered into the garden, and, when discovered, was trying his best to remove the cover from the hive. So it behooves him who contemplates keeping a colony or so of bees within town or city to see that they are placed in such a position that it is impossible for some innocent person to be stung by them.

THE QUESTION OF PASTURAGE.

As pasturage has played an important part in my outlaw operations, a short discussion of the subject would perhaps not be out of place. As every practical honey-producer knows, the first essential to successful beekeeping, be it either city or country, is pasturage. My own observations here led me to the conclusion that, for the man with just a few colonies of bees, and who keeps them only as a hobby, the average city affords better pasturage than the country. While cities seldom have flora that produces heavy flows of honey, as in the sage regions for instance, yet they do have a larger variety of flora that produces honey for a greater number of days; so while it does not yield a profusion of honey, there is a longer and steadier flow. Then, too, the flora of the cities is not as a rule affected by drouth, as any natural lack of water is supplied by artificial means.

California cities, as a rule, are peculiarly



A blue-gum tree (eucalyptus) in bloom.

favored in all that goes to make ideal conditions for the business man who desires to keep just a few colonies, there being large parks; and throughout the residence districts many of the houses are surrounded by a veritable riot of vegetation. Then the streets are lined with trees, principally pepper and eucalyptus. And here a word about the eucalyptus, commonly called gum-tree. There are many varieties of these trees, all coming from Australia. They all keep their foliage throughout the year, and are as apt to be found in bloom on Christmas as on the Fourth of July. The most common is the blue gum, the red gum being next, these being the most hardy varieties, although throughout the principal cities will also be found large numbers of lemon gum, sugar gum, vate gum, and iron-bark gum.

From my own observations, the sugar gum is the most profuse yielder of nectar. The first time I saw a sugar gum in bloom it brought to my mind the instance of my first acquaintance with pamarosa of the West

Indies, there being two reasons—first, the blossoms being similar, each consisting of a hollow cup in the center, surrounded by a mass of white hair-like petals; second, there being a number of bees around each blossom, each bee waiting as it were for its turn to obtain a load of nectar. The sugar-gum blossom, however, goes the pamarosa one better in that it has more odor, the odor being not unlike that of a ripe cantaloupe, and so strong that it conveys to one the idea that the blossom itself is fruit.

As an item of general information it might be stated that the eucalyptus is very apt to play an important part in honey production in California. The scarcity of lumber has resulted in a number of companies being formed for the purpose of planting eucalyptus, and there are to-day thousands of acres of trees that have been planted recently. So I think it safe to predict that, a few years hence, eucalyptus honey will be a staple the same as honey from clover, basswood, sage, etc.

And now a word of explanation: There will be many, no doubt, among the readers of this journal who will not approve of my attitude of mind, the procedure I have followed, or of the story I have written. To them I have no excuse to offer, no apologies to make. As to what I intend to do in the future, I can only say that I have no definite plans, other than that I will continue to keep my bees, and that I am thinking of working more for increase than for honey during the coming season.

San Diego, Cal.

[The eucalyptus is said to be "a wonderful producer of water-white honey, and as many as three bees at one time have been observed to sip up from a single blossom as much nectar" as they could carry.—Ed.]



A drive through the park. The trees are acacias and the shrubs myrtle.

AN IMPROVEMENT ON THE ALEXANDER BEE-VEIL

BY J. H. PETERSON

I think the Alexander veil is superior to all others for general use; but the one I use is a modification of the standard Alexander veil as sold on the market. I purchased one of those, but cast it aside. It did not furnish enough shade, and it did not stay fixed on the head as I want it to. However, I have improved it so that I think it is about perfect.

As I make it, it furnishes plenty of shade, being 12 inches in diameter. In the top edge I put a stiff wire, which assists materially in holding it in shape. My most important improvement, however, is the arrangement for holding it in place on the head. Without something of this kind it will fall around from side to side in a way that is a great nuisance. I sew a piece of tape about four inches long, and looped at both ends, across the top of the veil inside, about two inches in front of the center. I then tie a piece of hat elastic into these loops, and long enough to go around back of the head and fit snug. Sometimes, if the elastic is weak, I double it. This holds the veil in place, and is not at all uncomfortable.

I also sew a piece of cloth about 8 or 10 inches wide inside at the back to protect the back of the neck from the sun when working stooped over.

As thus made the Alexander veil becomes

cool, light, and comfortable; and it can be worn without a hat, with entire satisfaction. Ogden, Utah.



J. H. Peterson's improvement on the Alexander veil.

[We have tested this plan, and found it to be excellent. Indeed, it is the best suggestion that has been made yet, to hold the Alexander veil at such a point that the wire cloth can not touch the head at any point. There are many who like the Alexander principle; and any one having one of these protectors can easily put the idea into practical effect. —Ed.]

OUR APIARY ON THE APALACHICOLA RIVER, FLORIDA; HOW IT LOOKED LAST FEBRUARY THROUGH THE CAMERA

Catching Two Crops of Honey in a Season from the Same Bees

BY E. R. ROOT

The kodak views taken by our boys give a general idea of our apiary at Randlett's Landing, about 16 miles above Apalachicola. Fig. 1 shows the height of the platforms or scaffolding. When Mr. R. L. Tucker put

up these elevated sidewalks in this place he placed them two feet above the highest water-mark ever known on the river; and during the years that have elapsed, high water has never touched the bees.

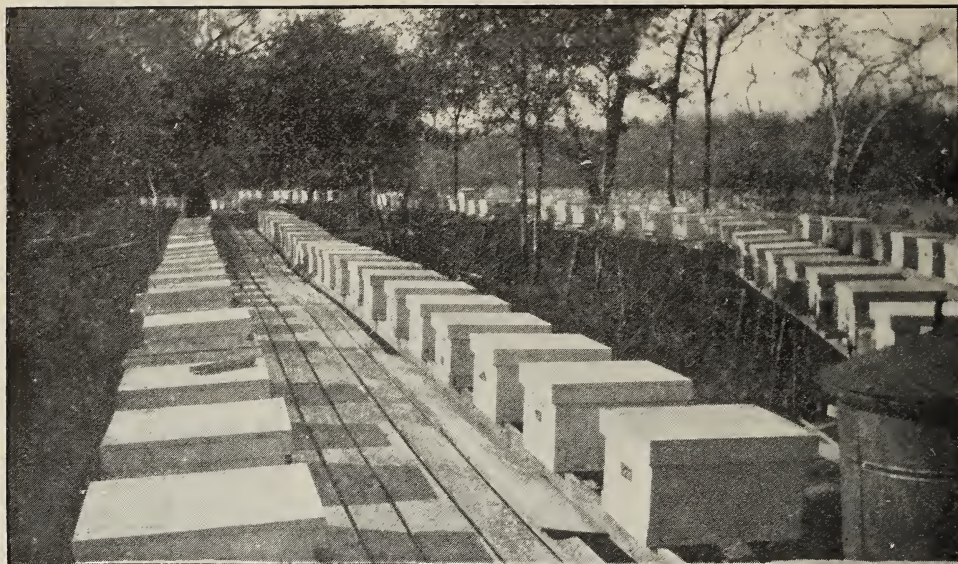


FIG. 1.—A general view of the Root apiary on the Apalachicola River, Florida. The 300 colonies are placed upon raised platforms or scaffolding, some five or six feet high, or above high-water mark. While these platforms are somewhat expensive, they are very convenient in affording easy access to all the colonies. There is no uneven ground, no shrubbery or weeds to interfere with the work or the flight of the bees, and a wheel-barrow has good wheeling to every hive.

One would naturally inquire, "Why not seek out land that will always be above high water, and thus save the expense of these high runways? There are only a very few locations of that kind, and they are all taken up. Mr. R. L. Tucker sought out this point because of the abundance of black and white tupelo and willow for furnishing early pollen; and he located well, as the subsequent history of the place has shown. Mr. Tucker finally sold out to Mr. A. B. Marchant and went north; but he has since come back, and located another scaffold apiary about four miles down the river. Mr. Marchant, the first year after he bought this scaffold yard, secured enough honey to pay the cost of the investment—bees, platforms, three buildings, and a launch, as seen in Fig. 3; but as he had more locations than he had bees to stock them he sold this one to us, and it is now in charge of his son Ernest Marchant.

As has been already explained editorially, the cold and cool weather of February and March gave us a little setback; but our Mr. Marchant believes that he will make his increase just the same. I told him I did not believe he could do it; but when I saw the honey coming in from black tupelo on the 17th of March I changed my mind. The bees dropped down at the entrances just as they would when working on basswood; and when a comb was pulled out of a hive the

rectar would fall out like rain. But *black* tupelo is not considered a heavy source for honey. It comes in just right to build up the colonies for the main flow later from *white* tupelo, which is a heavy yielder of nectar.

It will be seen from Figs. 2, 3, 4 that the hives are free from weeds, shrubbery, and uneven ground. This is a big advantage. While the *ground itself* just beneath the platforms is uneven, high and low in spots, the platforms are level from end to end. Our men, therefore, have nice clean board walks to every hive in the yard. It will be noticed that these long elevated sidewalks, so to speak, radiate in different directions from the workshops, one of which is shown in Fig. 4. This renders it possible to have tools and appliances, and every thing needed, within convenient reach.

On the 17th day of March 100 supers, consisting of full-depth bodies, were placed on the hives; and Mr. Marchant was expecting to put on as many more the next good fly day. These supers contained frames of foundation. When a colony becomes strong enough, two or three frames of foundation from the upper story are put in the lower one, and an equal number of combs and bees are placed in the upper story, with frames of foundation between. This is spreading brood with a vengeance, and ordinarily in the North such practice

would be inadvisable; but Mr. Marchant assured me that in this climate it could be done in safety. In one case in particular I looked into a single-story hive, with about six frames, where a frame of foundation had been given. Twenty-four hours later it was fully drawn out, notwithstanding it had been raining all day, and a queen was beginning to occupy it. Mr. Marchant is undertaking the problem of getting 6000 frames of foundation drawn out before he ships the bees to Medina. His plan is to build the colonies up to one, two, and three stories high, and then, just before coming back to the North, and after catching the main honey-flow, split them up into single-story colonies, giving each a queen. If every thing works out according to program we shall make a big increase, secure an early honey crop, move north, and then catch a clover crop. We have done it once. It remains to be seen whether we shall do it again.

At this writing, April 1, it would not be wise to say how many bees we can bring back; but if we have any kind of season Mr. Marchant will put in Medina more bees than we ever had before.

In the mean time our managing editor, Mr. H. H. Root, has gone south to Bradentown, Fla. About the 10th of April he hopes to go to Apalachicola and help the boys extract with some new power-driven machinery that he has devised. He is equip-



FIG. 2.—The other platform next to the river frontage of the Root apiary in Florida.

ped with a camera, and probably will come back with a lot of material to present to our readers.

For further references to this Apalachicola apiary, see the editorial department.

BEARS AND SNAKES AT OUR APALACHICOLA APIARY.

There are bears and snakes at our camp. Just after our boat reached camp one day, Joe asked us if we saw that black bear swimming the river. We said "No. Why didn't you shoot him?"

"Didn't have any rifle, and hadn't seen him soon enough, or I would have roped him and brought him to our camp."

"Sure it was a bear?"

"Yes," said Joe. "I could not have been mistaken. As he reached the other shore he stood out in plain sight, shook himself, and disappeared in the woods."

Now "Joe" is no weakling, and not in the habit of telling things he can't do. He is six feet six tall and well developed and a

giant in strength. He has been known to pick a 50-gallon barrel of honey from the ground, and set it in a wagon. If any man could tackle a bear in the water and bring him ashore alive he could. I told Joe if the bear came back while I was there he could have the "job" of roping, and I would look on—with an opera glass.

It seems that a bear had been prowling around the A. B. Mar-



FIG. 3.—Looking out on to the river from the Root apiary. Our launch is shown tied to the dock.

chant apiary six miles above. He had pawed things over generally. This same bear was evidently making for our bees; but seeing and hearing our boat come up the river he took for the opposite shore, and probably will not appear again.

Speaking about bears and their fondness for honey, Mr. A. B. Marchant told of the experience of a friend of his who watched a bear climb a bee-tree. His bearship ascended to the bees and then began biting and tearing away to make the flight hole larger. The bees attacked him so fiercely that he rubbed his eyes and nose with *both* paws. Down he fell pellmell, crashing through the limbs till he reached the ground. Nothing daunted he started up again and renewed his attack. Finally the bear got his paw into the combs of honey and began forthwith to smear his face, eyes, and nose with the sticky stuff. There was evidently method in his madness. With this extemporized bee-veil he began and finished his repast on the combs of honey.

This same eye-witness had seen other bears in the same act. A bear will always, he says, smear his face with honey as soon as possible, the evident purpose being to prevent the bees from stinging. How far it would prevent them from using their little weapons is difficult to say. But we do not suppose any of our readers would care to



FIG. 4.—Painted hives in readiness for the increase at the Root Florida apiary.

rely on this expedient in the absence of a veil or smoker. If they do will they please tell us how it feels—the honey or the stings.

Speaking of snakes, there were several large ones in the camp, and the boys feed and play with them. They are the so-called gopher snakes, useful in exterminating rats, gophers, and other small vermin. They are so tame that Ernest Marchant caught one and put it around Thompson's neck, and then took a photo; but the negative was poor, or we would produce it.

Camp life at our landing is not altogether uninviting. The boys buy their groceries by the wholesale, and then divide up the expense between them. Ernest Marchant is the cook, and a good one he is. The fishing is good, and squirrel-shooting fine. The camp is 16 miles from Apalachicola, and is seen from the river on the right side as one goes up. More anon.

REPORT OF THE LONDON, ONTARIO, DISTRICT BEEKEEPERS' CONVENTION

BY R. F. HOLTERMANN

The recent meeting of beekeepers from the vicinity of London was pretty well attended, and there was no lack of interest throughout the meeting. Mr. H. Gibson occupied the chair.

"Spring Management" was a subject very ably handled by John A. Lunn, Fingal. He claimed that the foundation for spring should be laid the year before. First, there should be a young queen, for with such there is a better chance to bring the colony through the spring. The old queen might be good; but there are rarely as many young bees to go into winter quarters when

an old queen is present. The requeening should be done the previous August. Protection is a good thing; but Mr. Lunn had seen colonies in box and other hives brought through the winter without protection. The bees should be packed on their summer stands. Each colony should have an abundance of stores; they should not be allowed to run short, as scant stores means less brood-rearing and a poorer colony. When spring comes in his locality (Middlesex County, Ontario), the colonies should be examined, if possible, in March for winter stores. If no honey can be seen between the

combs, the bees should be given combs of honey, or fed.

The colony at that time should not be examined for queens. Probably two weeks later would be better, or as soon as pollen is brought in. At such a time the queen is almost sure to be laying. Then every comb in the hive should be looked over, and any drone comb removed. Or, if such comb is full of honey, it should be placed at the outside of the brood-chamber.

The bees should have plenty of pollen. If they are short, a substitute should be provided. During the spring of 1913, in Mr. Lunn's section the soft-maple buds had been destroyed by frost. He then put out a chop composed of oats, barley, and wheat. The bees gathered what they could out of it during the day, and he fed the rest to the pigs at night.

Some colonies are found weak. If any are queenless Mr. Lunn unites such with the weak colonies. From that time on, the colonies should be examined every ten days or two weeks. As soon as the danger of chilling brood has passed he begins to equalize the stocks so as to have them all in equal condition for the honey-flow. When the hive is fairly well filled he puts on another super with comb. He likes to get a colony in such condition that the brood-chamber and super of a ten-frame hive will be well filled with bees, brood, and honey before the start of the surplus-honey flow.

Care should be taken not to let a colony get short of honey. If short, Mr. Lunn likes to give them a comb of honey; or, failing in that, 5 lbs. of granulated honey; or if he can not give that, then a thick syrup.

BEE-ESCAPES.

Some discussion took place about bee-escapes. Mr. John McEwen claimed that the best bee-escape board he had been able to find is one with an escape in the center, and then an opening through the front strip of the escape-board. The bees, as soon as they find they are separated from the brood-chamber and queen, pile out through the opening in the side, and in an unbroken procession pass down to the entrance of the hive.

Mr. John Newton advocated having the escapes near the edge of the board. The bees naturally run down the sides and edges of the hives, and for that reason pass out of the supers more readily.

R. F. Holtermann stated that he was getting out 250 bee-escape boards with the wire cloth in the board for ventilation, and to allow the heat from the bees to keep the honey warm.

QUEEN-REARING.

Mr. Wm. Elliott, in giving an address upon the above subject, advocated selecting ten of the very best colonies in the apiary the previous season, choosing on the following merits:

1. Color. The queen must be purely mated. His experience was that, among the best working colonies, there will be those with the best color.

2. A colony which starts brood-rearing early in the season, and one which has a large proportion of brood.

3. The workers should have strong, well-developed wings. The strong-winged bees can carry the heaviest loads. There is a marked difference in the build of individual bees.

The colony having the above characteristics to the fullest extent should be kept, from which to obtain larvæ for young queens. From the rest, take four or five of the next best colonies and insert in the center of the brood-chamber three or four combs with drone-cells. In the rest of the apiary try to prevent drone-rearing. Queen-rearing should begin from about June 5 to 10. (This applies to southwestern Ontario.)

Graft queen-cells in a couple of bars, and put these in a frame in the upper story of a strong colony with a card of brood on each side of the queen-cell cups. The object of this is to get royal jelly for priming the future cell cups. Next remove the queen in a good colony, saving her if she is young. Combs with only capped brood can be left in the now queenless hive, any other being removed. Give the colony a reasonable amount of pollen and honey, and be sure there is a plentiful supply of young hatched bees. Leave three places in the contracted brood-chamber for frames of grafted cells, the object being to make room for the colony.

The cell cups used are the Swarthmore. The royal jelly is to be taken from the cells in the super previously mentioned. The best time to graft is when the sun is nearing the western horizon. Stand at a west window, and turn your back to the sun so the light will shine into the cells. Take



Drone-laying queen taken from a ball of bees. The worker shown has hold of the queen's wing. Both were dead when found.

16 prepared cell-cups and put a piece the size of a grain of wheat into each cup, jarring the royal jelly into the bottom; then with a proper instrument (Mr. Elliott has one that he made for himself), put upon the jelly the very smallest larva. Suspend the cell cups in the holes in the top-bar when ready, and insert them in one of the three spaces in the queenless colony. Do likewise with the second and third frames. Leave the cells until next day in the forenoon. Use but little smoke when examining. It will be found that the bees have accepted two cells out of three. Remove those not used.

Now, this colony has cost too much for one batch of queen-cells; therefore remove these cell cups and place them in the upper story of a strong colony, making sure that there is some other brood above, and also provide a comb of larvæ. Give the cell cups

to a colony with lots of young bees. The queenless colony can start a batch of cells three times.

The argument that queens from cells reared for swarming are better is, in Mr. Elliott's estimation, faulty. The queen-cells almost invariably come from colonies which, on the face of it, can not be as carefully selected, and there is always the swarming impulse in connection therewith.

Mr. Morley Pettit, O. A. C., Guelph, gave an address upon the subject of marketing honey. He advocated the development of the home market, a good article, and fair margins for the retailer.

There was a pretty strong feeling manifested in the meeting that Ontario is producing about all the honey the Canadian market can take under present conditions.

Brantford, Ont.

THE INTRODUCTION OF MODERN METHODS IN SPAIN

BY OTTO HOLLANDER

According to the *Gaceta Apícola de España* of January, 1914, the Beekeepers' Association of Spain at its last annual meeting resolved to give a course of lectures in the various agricultural colleges and experimental stations of Spain, and to solicit the aid of the Government and of the various counties with this end in view.

This society has been doing excellent work for a number of years in that country, which is so well adapted to beekeeping by virtue of its mild climate and the variety of its flora; and through its organ, the aforementioned *Gaceta Apícola de España*, it is working very hard to convince the majority of the beekeepers of Spain of the advantages of the modern movable-frame hive over the old-style fixed-frame hive.

The average American beekeeper can hardly understand why it should be necessary that any society or paper should have to extol the virtues of the movable-frame hive; but it seems that there are as yet a good many farmers, and beekeepers as well, in some of the European countries who are slow to accept new ideas, and who still cling tenaciously to the old box hive of their forefathers.

In looking through these Spanish bee-papers one is rather amused to find that "honey produced in movable-frame hives" should be specially advertised, and, in fact, quoted separately, bringing, of course, a much higher price than the other. The following quotations are taken from the last number of the bee-paper mentioned:

Honey from movable-frame hives (miel movilista), 1st class, 100 to 110 pesetas per 100 kilos.

Honey from movable-frame hives (miel movilista), 2d class, 70 to 85 pesetas per 100 kilos.

Honey from fixed-frame hives (miel fijista), 50 to 60 pesetas per 100 kilos.

The prices thus range from \$6.10 to \$9.60 per 100 pounds for the former, and from \$4.30 to \$5.25 per 100 pounds for the latter.

Mr. Joaquin Layret is at the present time the President of the Spanish Beekeepers' Association, ably assisted by the Secretary, Mr. Santiago Baldó, and one can not but hope that their intelligent propaganda may be crowned with success.

[GLEANINGS is heartily in sympathy with the efforts of this association, as well as those of its Spanish colleague *Gaceta Apícola de España*, and we wish our brethren across the sea the best of success in spreading the "gospel of modern beekeeping."—ED.]

Smoke Method of Introducing Used 30 Years Ago

About thirty years ago I practiced the smoke method of introducing with this variation: I would smoke the bees and then take a frame from the center, with adhering bees, and shake them in front of the hive and drop the queen down among them; and after they had run in I smoked them again. My idea was to make it appear to the bees as if a swarm were returning with a queen, and I found it very successful; but as I have generally bought my queens I followed the plan given for introduction, and have nearly always had good success.

Hoopeston, Ill., Jan. 14.

G. T. WILLIS.

Heads of Grain from Different Fields

Questions Regarding Dr. Miller's Honey Crop

1. Would not Dr. C. C. Miller's honey crop be an interesting subject for discussion on the relative merits of the eight or ten frame hives for section honey?

2. How about "shaking energy" into the bees by Dr. Miller tearing the brood-nest to pieces every week or ten days to destroy queen-cells?

3. With this method to prevent swarming, and not wishing any increase, how does he get his young queens?

4. How many supers did he have at one time on that colony that made 384 lbs.?

5. How many swarms did come out on him in spite of destroying the queen-cells every eight or ten days?

6. About when did the honey-flow begin, and when did it cease?

Fredericktown, Mo., Feb. 20. JAS. BACHLER.

1. Yes, that's a very interesting subject; but I hardly know how we can compare two things if we have only one of them to compare. There were no ten-frame hives in the apiary. It is true, however, that up to the time of putting on supers there was no chance for the queen to be crowded in perhaps any of the hives. When any queen had no longer room in one story, she either had two stories, or empty combs were exchanged for full ones, the latter being put where they would do most good. Neither is it certain that there was any crowding after supers were put on, for *abundance of super-room* was given, and I think that gives more room in the brood-chamber. All things considered, however, my guess would be that if any one has not on hand a supply of eight-frame hives he would do as well or better to use ten-framers.

2. I've had no very indubitable proof that any energy was added by the shaking. Certainly I did not shaking in any case where I thought it would do no to shake. If any one enjoys shaking I don't believe it does any great harm, although it's possible the bees might do just a shade better without it. Then, again, may be they wouldn't. I don't know.

3. Raise 'em in nuclei from best stock *only*, and then stick 'em in wherever needed. Besides, there was the superseding. Please get it into your head that there is no need of swarming to have young queens, for in the natural course of events *every queen is superseded*, and, of course, superseded by a young queen.

4. I don't know. Eight was the highest number on any hive at one time, and such hives were very scarce. I wonder why you ask about 384. Three colonies did better than that, one of them yielding 402.

5. I don't know. I've just looked over the first 20 numbers, and 7 of them actually swarmed. Possibly the general average was more than this, for it was about the worst year for swarming I ever knew. But, of course, no swarm was hived as a swarm.

6. Began about June 6, and closed somewhere about Sept. 20.

Marengo, Ill.

C. C. MILLER.

Painting; Is it Done Chiefly for Looks?

If one takes the attitude that painting hives or buildings is done chiefly for looks it seems to me that he has to stand alone against almost the whole world. Our great railroad companies not only paint the wooden but even the iron bridges; in fact, every thing is painted regularly. If this is all being done for the looks only, it is time that we should find it out.

I have hives that have been painted for twenty years, and they are all in good condition. The cor-

ners have not opened up a particle. An unpainted hive will open up at the corners, and become badly warped, in three to five years in this climate. I think Mr. Doolittle's story of the unpainted house that lasted so long is like the man who used tobacco all the time and yet lived to a good old age. That man does not know how much longer he might have lived if he had not used tobacco.

MOVING APIARIES SOUTH.

Moving bees south in the winter seems to me a great scheme. In my locality, in September, when the honey-flow is over, the colonies are in the best of condition to keep right at storing honey; but the flow stops with the hives full of bees, mostly young bees too, and I have to leave from forty to fifty pounds of honey for them to live on through the winter and spring. Now, if I move south, ten pounds or so would be enough, probably, and I could extract perhaps thirty pounds per colony more, which, at 8 cts. a pound, would amount to \$2.40. This would probably pay for moving the bees south and back again in May, and then the honey secured in the south would be all gain. The trouble would be to find suitable locations.

Brush, Col.

DANIEL DANIELSON.

[In your figures regarding moving bees south and back again you do not take into consideration the risk of accident on the way, or of having bad seasons in the South when the bees get little or no honey, but have to be fed considerably. When these possible losses are all figured in as overhead expense, so to speak, the profits one year with another are less. But, at the same time, there are great possibilities in the plan. Of this we shall have more to say later on.—Ed.]

Don't be in a Hurry to Condemn Your Own Locality

On page 895, Dec. 15, 1913, H. F. Wilson speaks of Central Oregon as being a good bee country. Now, for the benefit of such people as are in a fairly good place, and are making a little each year from their bees, I want to say, be slow about condemning your own country; don't sell out and move to a new field before making a thorough investigation, and don't forget that any country will have its disadvantages as well as its advantages. I have kept bees in Indiana and Washington, besides in Central Oregon, and I am sure either place is as good as this. We have no foul brood, neither sweet clover nor white clover. Sage furnishes nectar once in about four years. Whenever it rains on alfalfa after it blooms there is no honey from the blossoms that get wet.

Redmond, Ore.

C. H. MILLER.

Camera Tripod to Support the Hive Close to Clustered Swarm

I have had swarms settle on all kinds of places, such as on the top of rail fences, the trunk of a tree, top of a fencepost, etc. I do a little in photography, so have a fairly heavy camera tripod on hand which I have constructed into an artificial swarming device.

I first bored a hole in the center of a spare bottom-board; then a small bolt fixed it solid on top of the tripod. I then get the hive for the swarm on top again, and adjust it to height by the thumb screws in the legs; put the entrance in contact with the cluster, and—there you are. I find it the easiest, surest, and most satisfactory method of catching a swarm I have seen or heard of.

ARTHUR T. HARPER.

Minnedosa, Manitoba, Can., Sept. 3.

Widening the End-bars of Danzenbaker Extracting-frames to Permit the Use of Eight Combs in a Super

I wish to tell of a change I have been making in our Danzenbaker extracting-supers that has added 20 per cent to their efficiency, and much more than that to their value in harvesting a crop of honey. Frames spaced as they are, ten in a hive, while just right for the brood-nest, make too much handling and uncapping for the amount of honey harvested. How to remedy this condition of affairs, and still preserve the good feature of removing the case *as a whole*, has been my study for some time. The problem has solved itself in this way: Rip out of $\frac{3}{4}$ -inch lumber, pieces scant $\frac{3}{8}$ inch in thickness, and tack these on to one side of both end-pieces of the frames. With this attachment eight pieces of comb will fill a ten-frame super, giving combs for twenty per cent more hives, and giving the bees an equal amount of storage room while the beekeeper handles twenty per cent less of frames. A large saving of time is thus effected just when time is of its greatest value. The device delighted us with results last year.

TROUBLE WITH SMOKE METHOD OF INTRODUCING.

As to the new way of introducing queens by smoking them in, while successful in the early part of the season, during a good honey-flow, later in the season I lost two fine queens. Unless a good honey-flow is on I still prefer the cage system—feeding the colony about a pint of thin syrup for about three nights, *during and after the release of the queen by the bees*; and, I might add, *and not opening the hive for a week*. This rarely fails us at any time of the year.

A "BEE-LINE."

Does not the word "bee-line" refer to the straight course an absconding swarm takes *en route* to their new home rather than to the course taken by bees while in quest of or returning with their loads of nectar.

Allow me to draw special attention to that very valuable recipe for soft candy given on p. 158, May 1, 1913. It is so simple and inexpensive, with sugar at $4\frac{1}{2}$ cts. per lb., that all can afford to treat any doubtful colonies, whether indoors or out, to a cake of it.

Toronto, Ont.

F. P. CLARE.

Securing Empty Combs for Bait

I have never learned how to get bees to build comb in sections or in the super, when there is no flow of honey, without liberal feeding. They will often occupy the supers in hot weather; and if no honey is coming in they may mutilate the foundation; but build they will not until they have honey to store. My only way of securing empty comb in sections is by letting the bees clean out all partly filled sections as soon as the honey harvest is over. These may be safely and profitably used the next season.

My method of using bait sections is to put one in each corner of the super, for these corners are more likely to be left poorly filled. With a bait section in each corner the super will generally be filled solid. A SAFE WAY OF INTRODUCING BY THE CAGE PLAN.

I have not demonstrated the smoke method for introducing, and I have not observed to what extent it is necessary to smoke bees to make them good-natured so that the queen may be run in; but the method that has met my needs best is as follows: When the new queen arrives, remove the one to be superseded, by putting her in an introducing-cage made of wire cloth; and after she has been in the cage about 30 minutes, take her out and allow the new Italian, with all her escorts, to enter. Put them at once down between the frames; close up the hive, and the next day lift the cage and a frame of brood, and let two or three workers crawl out among the other bees. If there is no fight you may be sure that you can next release the queen; and you will be

readily convinced of her safety by the way the bees back away from her to make room as she crawls about the comb. Hang the frame back in its place, and the work is done. This is not a new method, but I find it satisfactory for a small beekeeper.

Jamestown, N. Y.

REV. J. W. WILSON.

Burning Out a Smoker to Get Rid of the Creosote

My way of getting rid of the creosote in a smoker is to put a little coal oil in the fire-cup and some more in the cap. A large quantity is not necessary, but there should be enough to soak the creosote well. Let it stand a few minutes, then put a plug of wet paper or hard wood in the draft-hole at the bottom of the fire-cup, and light the oil with a match, letting it burn by laying the smoker down on its side with the cap open. When it has burned long enough, or if it gets to burning too fast, close the cap, and the fire will go out. The wet plug is to keep the fire from coming out at the bottom and charring the bellows-board. After burning out, scrape with a putty-knife or screwdriver.

Georgetown, Del.

GEORGE W. LOUDER.

My Method of Folding Sections

I use a table high enough so I can stand up. I take fifty sections, lay them in front of me with a cup of water handy. I slip a section off the pile with the groove down, and place my fore finger in the water, then over the grooves, till the pile is done. Then I turn the pile over and fold them. They are strong and square.

Oak, Neb.

A. M. DEVITT.

[We have tried a modification of this plan to some extent. We spread a long row of sections on the floor or table, groove side down, and all grooves in line. With a soft marking-brush we wet the backs by drawing the brush along the whole row, one groove at a time.—ED.]

Newspapers to Keep Down Grass and Weeds in Front of the Hives

I have just been reading the way to kill weeds with acid, p. 821, Nov. 15. I have a method which I have been practicing for several years, for keeping weeds from growing in front of the hives. I use old newspapers—many of the big dailies are not good for much else. Early in the spring, before the grass and weeds start, I raise the front end of the hive-stand and insert the end of a newspaper; then smooth out in front, and lay small stones or earth in the corners to keep the wind from blowing them away. This will smother the grass and weeds.

Last spring I located an apiary in an old orchard seeded to alfalfa, and I found the paper very effective in keeping the alfalfa from growing. There should be six or more layers of paper.

Denver, Col., Dec. 17.

W. L. PORTER.

Hives Used 34 Years

On page 26, Jan. 1, I read what was said about old hives retaining their value. I have some hives in use in my bee-yard, called "Simplicity Improved." They were made in 1879. They are made of white pine, and were painted two coats. Two years before I commenced to keep bees I sold the hives for one Dan Royce, and transferred bees into them. I helped to make the hives, so I know what I am talking about. I made hives long ago *without paint*, of the same kind of material; but they are decayed and gone. I am using the dovetailed for all of my new ones, but I paint them. I have only 76 colonies now.

I have taken GLEANINGS ever since 1882, and believe I have every number up to this. I expect to take it as long as I live.

Cowden, Ill., Jan. 9.

A. W. SPRACKLEN.

Uniting in Spring; Rearing Early Drones

I have a colony of bees which has lost its queen within the last few days. On one frame they have a few scattered cells of brood, which is all capped, but no eggs nor uncapped brood. They have started several queen-cells, none of which have brood or eggs.

I should like to know if I can unite this queenless colony with another late swarm of last season, which has a young queen. Both have plenty of honey, and the young queen has a nice lot of brood now. Can I do this successfully at this time of the year?

What is the proper way to handle one frame of drone comb to each hive? I now have the drone comb at the side of the hive. When would you move it to the center? Most of them are full of honey.

Ghent, O., March 30.

R. E. McKISSON.

[We think it would be advisable for you to unite this weak colony with one of your stronger ones. To do this, remove the cover from the strong colony and place upon it a sheet of newspaper. Over this set the weak one after having removed the bottom-board. After a few days you will find that the bees will have eaten away the paper and united peaceably. It is best to do this in the evening after the bees have quit flying, in order that you may have all of these in the weak colony.]

If it is extra-early drones that you are after, you can accomplish this by moving the drone comb to the center of the brood-nest at almost any time now; and in order to stimulate the bees to the rearing of drones, and to get the queen to lay in the comb, it would be a good plan to mutilate the cappings of the sealed honey. However, we doubt the advisability of trying to produce drones ahead of the time when queen-rearing can be successfully carried on. It would be better to wait until about fruit-bloom time before making such a manipulation.—Ed.]

Swarm Control and Increase

I have five hives of bees, and am in business so that I cannot be at home except Sundays. I should like to do something to keep them from swarming, and at the same time increase them. They are in frame hives, but the combs are not straight enough to remove without damage. My idea is to put a body with full sheets of foundation under each colony, with a queen-excluder between the two bodies to keep the queen in the upper body. When the bees start work below, remove the upper body with the queen to a new stand and either introduce a queen to the colony on the old stand or put in a one-frame nucleus with queen. Then the field bees from the old hive will return to the new one in the old location. The brood hatching in the old hive will keep it sufficiently strong. Is my theory all right?

T. H. METTLER

East Millstone, N. J., March 30.

[Your plan for swarm control, and at the same time making increase, is very good, excepting that we think you would have better results by leaving out the queen-excluder, and allowing your old queen simply to go down into the frames of foundation in the lower story and start a brood-nest. Then when you remove the upper story to a new stand you will have brood already there for your new start; and when the division is made you can supply the queenless colony with a queen.—Ed.]

Fresh Sawdust from Green Maple for Pollen

Replying to an article relative to artificial pollen, Feb. 15, I will say I have fed flour for 25 years with apparently good results, though I would never put it in the hives. I place it in the yard in shallow boxes—rye, graham, shorts, and bran thoroughly mixed. The coarser particles prevent smothering or

getting the bees covered with it. They work it as readily and as greedily as they would natural pollen or even honey; and I never use honey or any thing to get them started; but when natural pollen is obtainable, and weather such that they can gather it, they desert the artificial.

A number of years ago, when living in the village of Hillsboro, there was a handle factory only about 40 rods from my home yard, where they used nothing but green hard-maple timber. All handles were run through a sandpapering machine, and the dust from this was as fine as flour, and was blown with sawdust into a heap outside. In early spring that dust pile would be alive with bees, gathering it the same as pollen, and carrying great loads of it into their hives day after day. Of course it was slightly sweet, and they utilized it in some manner as they do pollen. They brought in lots of it; but when natural pollen opened up they quit the sawdust.

Union Center, Wis., March 5. ELIAS FOX

Sawdust as a Food for Bees

After reading the articles and editorial comments with reference to bees working on sawdust, pages 154 and 233, the writer feels that some further evidence might convince the editor that perhaps there may be some nutriment (for bees) in sawdust. I will, therefore, make bold to offer a few facts relative thereto.

In connection with our planing-mill we have been operating a small log sawmill, on occasional days, since 1905, so that there is some sawdust lying around at all times. Every spring—yes, upon successive warm days any time after New Year, the bees appear in great numbers. We cannot operate this mill on warm days during the months of February and March, or until natural pollen comes in, without killing thousands of them.

From the sawdust of some kinds of timber, notably hickory and maple, the bees carry large loads in their pollen-baskets, and regardless as to whether or not they have pollen in their hives.

We know that bees may not for a long time work on rye chop set out in the open, and perhaps not at all, unless there is some sweet added to get them started; but they will readily find a pile of freshly cut sawdust. However, once started, they will take rye meal in preference.

Littlestown, Pa., March 28.

C. F. BUCHER.

Sawdust as a Substitute for Pollen

On page 154, Feb. 15, I notice an item regarding the use of sawdust by the bees as a substitute for pollen. My bees have obtained their first pollen from a nearby sawdust pile for a number of years. The sawdust is freshly sawed, and they seem to seek the fine particles. If a substitute is provided, such as rye flour, they soon leave the sawdust.

In looking over my bees yesterday I found one colony which was afflicted with paralysis. Having used sulphur before in similar cases I used it this time, sprinkling it over the bees and at the entrance. In a short time bees were seen loading their pollen-baskets with the sulphur, and entering a hive near by. They did the same to-day. I think they will find themselves "stung" when they try converting sulphur into bees.

Barkhamsted, Ct., March 17. DELOS O. HART

[This is an interesting report, in that it shows that bees may be deceived. Now, then, if bees were deceived by the sulphur may they not be deceived in like manner and carry in a good deal of trash? One beekeeper wrote us that his bees liked ginger! They were carrying in great loads of ground ginger-root that happened to be exposed.—Ed.]

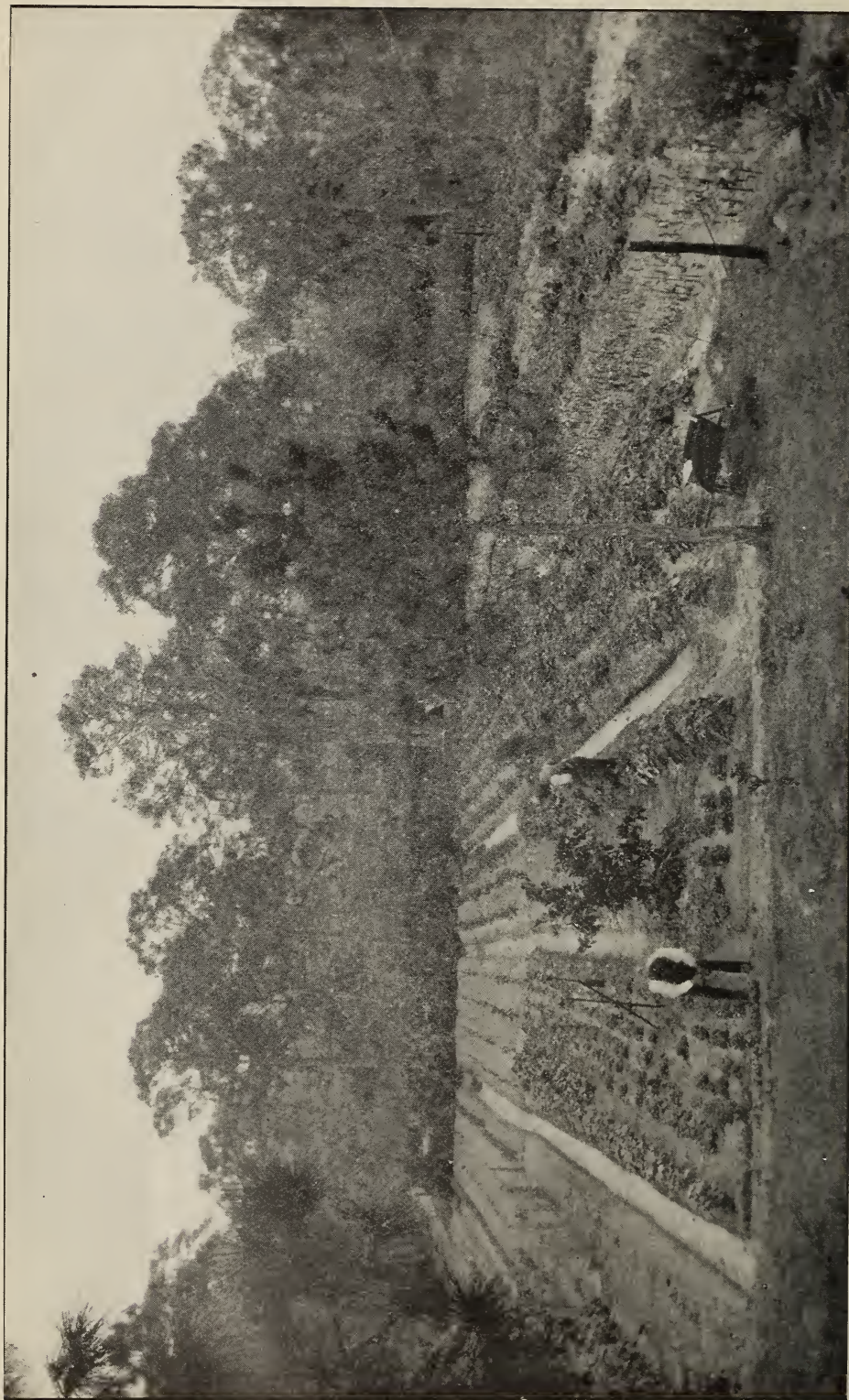


FIG. 1.—A glimpse of our Florida garden taken from the west. A. I. Root is in the foreground, stooping over, preparing some plants to set out, wholly unconscious that his picture and that of his garden was being taken by E. R. R. from the upper bedroom window of the house shown in the other view. His man Wesley, with the hoe, is shown in the middle foreground.

HIGH-PRESSURE GARDENING

A. I. Root

OUR FLORIDA GARDEN, ETC., MARCH 2, 1914.

I am glad to give you some glimpses of the best garden we have ever had in Florida, and, in some respects, the best garden we ever had anywhere; and I have always had a garden of some kind since my good mother (bless her memory) taught me to love gardens *seventy years ago*. I have only recently learned that here in sandy Florida we need not only *tile* drains but surface drains also; and in pictures 1 and 2 you will notice between every four or five rows of stuff there are deep wide paths that not only serve as walks, but that carry off the water when it rains so there is a surplus. Now, this isn't all. At the lower right-hand corner of No. 2 you see a bed of potatoes. Well, Wesley has been gradually "learning the trade" of turning under large amounts of green stuff; and when the bed was made, there was a swamp of gallberry, grapevines, blackberry, Bermuda grass, etc., about as high as one's head; and when I asked if he could get it *all* under he replied:

"Yes, sir; if you say so, *under it goes*;" and in due time it was all out of sight, and

the mellow soil raked over smooth, rounding up higher in the middle of the bed. Perhaps I should add this "thicket" had been a favorite spot for the chickens for several years, especially when the sun was hot, as it was cool and shady, and no hawk could follow them into this shady retreat. I confess that when the potatoes were planted it was with some misgivings; but when they came up so promptly and were "knee high," in about four weeks it was one of my "happy surprises." On the left upper corner of cut No. 3 you will see some potatoes at about six weeks from planting. They are the Red Triumphs, and there are already potatoes as big as a goose egg, bursting up under those great perfect leaves as large as one's hand. *This winter*, the fact we have had all the rain one could ask for, is perhaps one reason *why* burying so much green trash has been such a success.*

Let me digress right here to announce *another* of my "big discoveries." We get

* After Ernest took the three hills of potatoes, I dug one of the best hills and got 16 fair-sized potatoes, some quite large, and the hill was green and still growing.



FIG. 2.—A glimpse of our Florida garden taken from the east. A. I. R. was anxious to get this picture looking toward the west because it shows his dasheen and his potato-vines a little better. He is seen with the hoe among his dasheen on the left. The potatoes are shown on the right. Speaking about the "hoe," A. I. would rather "play" with that than any gun, camera, fishing-rod, or ball-bat or any thing else in the world. He is never happier than when in his garden "playing" with his plants.—E. R. R.



FIG 3.—How the potatoes grow down in Florida, where Colorado bugs, flea beetles, etc., are (as yet) unknown.

our new potatoes by "grabbling" them wherever we see the ground puffed up; and in this soil they are smooth, round, and perfect in shape. Now, in preparing new potatoes (that are not perfectly ripe) for the table they are usually scraped instead of being pared; and when I saw Mrs. Root scraping a panful I bethought me of the stiff palmetto brushes with which we brush the dasheen tubers before they go into the oven, and, sure enough, the brush removed the potato skins in a twinkling. As we have so much dasheen brushing to get them ready for the mail, I bought a variety of brushes; and a big stiff brush made for cleaning horses proved the best implement. Now, when Mrs. Root asks for potatoes for dinner I get the potatoes and Wesley washes and brushes them, and you can't imagine how handsome they look when they are ready for Mrs. Root.

I get them out of the ground first, because I love to do it, and because I think I can find them and disturb the still growing vine less than any one else. Why, it's like catch-

ing big fish to catch my finger under a whopper and turn him out, so handsome and perfect in shape.

Cut No. 3 shows a spot where I get them. Cut No. 4 shows a hill of dasheens that came from a single small tuber planted in January, 1913. The chickens got at it last summer; and when I got here it had made very little growth. It has now "stooled out," as you see, so there must be, I think, toward a peck of tubers. I gave it in December about a pint of fertilizer and cotton-seed meal, and it soon responded to the treatment. Besides the tubers there are enough green stalks and leaves to make several delicious meals.

Cut No. 5 shows what Ernest calls our "waterfall." The water above is fresh, while that below the fall is salt; and as this rises and falls with the tide, the waterfall—or rather,

perhaps, the "rapids"—varies in depth from perhaps three feet to nothing at all, as the tide sometimes goes so high as to cover and obliterate the fall entirely. There is, however, almost always enough fall to make it what I call our "babbling brook," and I always enjoy its music. It is a favorite spot for the ducks; and if I don't get aroused promptly at 8:30 A.M. to let them out of their yard they get up a concert of protest that is louder than many "waterfalls." The alligator cave is in the rocks just above the fall, and visitors almost always inquire about it, and I have to tell the story over again about the alligator and the ducks. He has never come back since Wesley made him give up his unequal and unfair fight with the courageous hen that was the mother of the ducks.

The transparent water above and below the fall is very prettily embellished with pearly-white shells, and sometimes a duck's egg adds to the beauty of the bed of the rippling stream. It just now occurs to me that we ought to have a book where the

readers of GLEANINGS who make us a call can put down their names, residence, etc. It will need a fair-sized book, for they come not only from all over the United States, but I might *almost* say from Europe, Asia, and Africa.

MOTH-BALL AND CREOSOTE FOR SQUASH-BUGS AND MITES.

I tried the moth-ball remedy for cucumbers and squashes, and it worked to a certain extent; but I did not get to try it till the vines were pretty badly mutilated and squashes were full of worms, some of them. The worms hatch inside of the squashes, melons, and cucumbers in this locality, different from what they do in Illinois and Iowa, where I formerly lived. I had some summer squashes, and quite a good many cucumbers that did better than my neighbors' in that line this summer.

In your poultry talks I have never known you to mention creosote (a by-product of coal, I think it is) as a good thing to get rid of mites. I generally have to apply it about twice through the summer to keep pretty well rid of them. I use two or three gallons with a brush, and go over roosts, nest-boxes, and walls about as high as I can reach, and generally spill it around on the ground under the roosts, and it answers for some time to come. Care should be taken about using it in very close houses, as it might smother young chicks, especially if the weather is very warm. I lost several young chicks at one time by creosoting a rather tight barrel. They went into it at night, and several of them smothered from the gas thrown off by creosote. It can be bought here by the barrel at 15 cts. per gallon, and perhaps a little higher in smaller quantities.

The Semet Solvay Co., of Ensley, Ala., manufactures it, and will ship by the barrel or in less quantities, I think.

GUY N. VEDDER.

Birmingham, Ala., Oct. 15.

"HELIANTH," THE NEW "WONDERPLANT."

Almost 70 years ago my mother wanted a flower-bed, and father fixed one up with some very rich dirt, and seeds were planted. In due time a very thrifty plant appeared:



The potatoes that grew in six weeks, and the brush that brushed the skins off, instead of paring or scraping. They are the Red Triumph, and one potato is shown only partly "peeled."

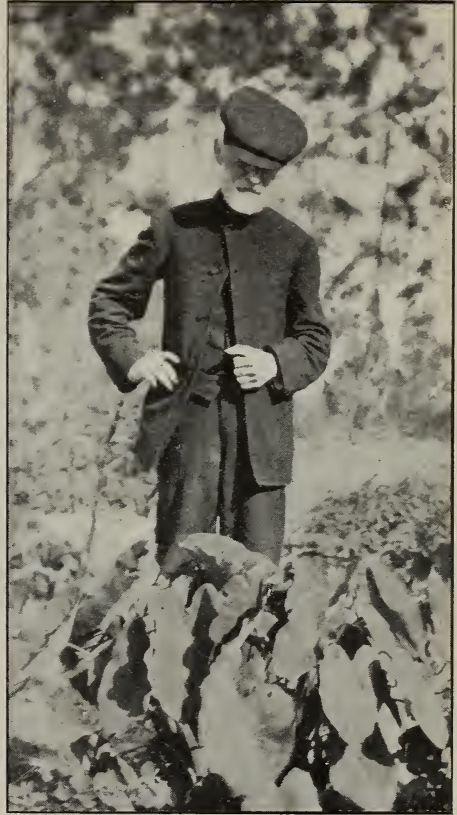


FIG. 4.—A clump or hill of dasheen where a rough small tuber was planted over a year ago. A. I. Root admiring his dasheens.

and while father declared it was a weed, mother insisted it was one of her new acquisitions. Along in the fall it did become a wonderful mass of bloom, and this bloom looked exactly like little sunflowers. Father still kept joking about her great weed until near frost time, when somebody asked why the ground was heaving up about the plant as if it concealed a great hill of potatoes or some similar tuber: and then there was a big laugh all around about mother's choice "posey." It was an *artichoke* that did wonders under the stimulus of very rich soil and anxious care. What brings the matter up now? Why, a



FIG. 5.—A glimpse of the drainage canal where the ducks play, at the foot of our garden.

circular with a picture that recalled to memory mothers' flower, and with the picture one of an exaggerated hill of artichokes. Here is some of the reading matter:

BIG MONEY GROWING HELIANTI.

Helianti, the new "Wonder Plant," the great combination vegetable. As a money-maker it's a wonder. Unlike ginseng, you don't have to wait five years for a crop. A very showy flower and a new summer and winter vegetable of phenomenal merit. This new plant produces showy golden-yellow flowers like cosmos blossoms, in endless profusion, and immense quantities of fleshy tubers, somewhat after the style of sweet potatoes, that are splendid eating fall, winter, and spring. It stands both heat and cold, and will thrive anywhere in any soil or climate. What would you think of hay, potatoes, asparagus, cauliflower, oyster-plant, mushrooms, squash, and beautiful flowers, all on one plant?

The Postoffice Department and the Department of Agriculture should get after Burgess Seed and Plant Co., Allegan, Mich., for advertising an old plant under a new name, as something new. The artichoke is really one of the sunflower (*Helianthus*) family.

"COCOE," THE DASHEEN OF JAMAICA.

Dear Mr. Root:—I have been very much interested in your articles in GLEANINGS about the dasheen. Ever since you first mentioned it I have been wondering if it is the cocoe we get here. It is grown largely here, and the tuber is one of the principal foods. The "head," or "corns," as you call them, are given to pigs, and are used for planting cut up in bits. The young shoots or "buds," as we call them, are used along with "callaloe" (a kind of spinach), and pumpkin "buds," in making a soup called "pepper pot." Of course, there is a lot of pepper put in, and other things.

There are six different kinds of cocoes grown here. These are black and white Commander; black and white Burban; Minty and Baddo. The tubers of the first five are eaten, and the first two are the best. The last named, the "head," or corm, is also eaten; but, say, I like it.

The general way of planting here is, after the land is cleared of bush, holes are dug about one foot by $1\frac{1}{2}$, and 6 inches deep, and one "bit" (cut from the "head") put in and covered. They are generally planted on the side of a hill, and thrive best in gravelly soil. They mature at a year from planting, but can be eaten before, anywhere from eight months. The leaves of the dasheen in the pictures in GLEANINGS are just like the cocoe leaves. The cocoe grows to a good height, according to the soil. No manure is given here, but the land is mulched before planting. After it is planted it is just kept free of weeds—that's all.

I am sending you a tuber of the Black Commander under separate cover, as a sample. I hope it will arrive in good order, and that you will like it. This is only a medium-sized tuber. Some are twice this size.

We are having cool weather here at present, which I think is keeping back the bees from going into the supers and building up generally. Of course I am speaking for this locality only.

HERBERT A. KOLLE.

Alma, Brown's Town, Jamaica, B. W. I., Feb. 28.

My good friend, we are exceedingly obliged to you for the above, and for the cocoe tuber. I cut off the lower half and baked it as we do the dasheen; and, although it has a slightly different flavor, it is, I judge, fully as good. The top part with the bud, I have planted near the South African "Amadumbe," and if this continues I shall soon have dasheen from all over the world.

HEALTH NOTES

OVEREATING; RHEUMATISM, SORE THROAT, ETC.

We clip the following from Terry's Health Hints in *The Practical Farmer* of March 14:

From Victor, N. Y.: "I have rheumatism, swelled and painful finger joints. They are getting worse. Doctors say they can not cure me. Please advise diet." No drugs or medicines will cure your fingers. But there is every probability that nature can relieve you, so you can get along nicely, if you will live rightly in every way. Life will be a burden soon if you don't. Nothing else is so important as to cure yourself right now. Best foods are fruits, unbolted grains, butter, vegetables, and a small amount of properly baked beans or nuts when craved. Don't forget baked potatoes, and to drink two or three quarts of pure rain water per day.

HIGH COST OF LIVING CUT DOWN TWO-THIRDS.

How would you like to live where it gets 50 degrees or more below zero? How would you like to live where the first freight in the spring gets in about July 4th, by boat, and the last one in the fall early in October—nine months without the possibility of getting any thing by freight, and perhaps only letters to be had by mail. This is the condition reported by one of our readers, Isaac Dutton, Fairbanks, Alaska. He says: "When I was in town last 4th of July I got 21 copies of *The Practical Farmer* at once, which had come in by boat the night before." Think of what it must be during the long, cold winters not to be sure of having any papers or magazines from the outside world to read, unless they are laid in during July, August, and September. It requires close figuring to order things ahead for the year so as not to run out during the nine months when they are shut in by themselves. Perhaps friend Dutton will be getting this paper to read next July. We have a valuable report about cost of his living from this reader. He says: "I have bought seven of your health books for myself and neighbors. I am gradually getting around to your simple way of living. In the past I used to lay in nearly \$400 worth of food supplies for the winter. Two years ago I laid in \$350 worth. One year ago I reduced the amount to \$250 worth. This last fall I put up a little less than \$100 worth of food supplies, and I have an abundance; am feeling finely. I am 55, but actually feel better than I did when I was 35. Am growing young! have made up my mind that it is foolish to grow old. I am eating only the simplest foods which bring the most perfect health." Think of such a progressive letter from far-off cold Alaska. Verily, Americans lead the world.

There you have it, friends, with a vengeance. "The high cost of living" is not only a great waste of money (in fact, that is only a trifling part of it, comparatively), but our pains and aches, sickness, and death are the direct result of indulging in food needlessly high-priced, and *too much of it*. This good man away off in the frigid North finds out by actual experiment that \$100 worth of food actually gives *better* health than the \$400 he had been spending.

For some time I have been working (and *praying*) to find out how much an excess of food has to do with health, colds, grip, neuralgia, etc., for instance. Well, I have

not had a bit of "cold" all winter (although Florida has had the most cold days on record), and I have been boasting I have not had "sore throat and earache" for several years. Along in March some friends from the North came; and, naturally, we had more of a variety to let our friends see the nice things to be had here; and, sure enough, the old sore throat came back. My health was so good, however, I soon rallied, and in about ten days was mostly over it. One day I was ravenously hungry. It seemed as if I could not "get satisfied," and, somewhat as an experiment, I ate "all I wanted." I felt a little uneasy after dinner, and decided I must get right at some hard work, and soon forgot all about the matter. In the evening I said, "Sue, my throat is stinging and swelling awfully. It really seems as if I must have this thing all over again. I have been careful to wear my overshoes when on damp ground, and I do not see what I *could* have done to bring it back." I went to bed with a hot soapstone at my feet and well bundled up, and this morning I am pretty near over it; but I am satisfied the "big dinner" caused it all. Suppose I had also eaten a "big supper," as the most of you do, and I almost always (after eating my two apples and half of a grapefruit) feel hungry enough for a "good supper;" where would my sore throat and earache have been? It takes self-control, I know, as well as you do; but elderly people who have given up hard toil mostly *must* learn self-control or take the consequences. Just try not eating any thing *at all* after 4:30 or 5 P. M., and see if Terry is not *exactly right*.

THE MODERN SKIRTS; WOMEN'S DRESS, ETC.

We have had no end of criticism through the press about the way women, and especially young women, see fit to clothe themselves in these latter days. I have once or twice suggested that the new fashion favors health, because it admits air and light, and is less burdensome on the wearer than the fashion heretofore has been. Of course I would not for a moment favor any thing that restricts rapid walking or young girls from running. At the same time, I would not for a moment encourage any thing tending toward indecent exposure. It seems so good an authority as the *Youth's Companion* has seen fit to enumerate some of its advantages. See the following:

Is there not perhaps something to be said in defense of the light, close-fitting modern skirt? Why view it with hostile eyes merely because it is "some-

thing different"? Why judge it by the form it takes in its most indiscreet and extreme manifestations?

Compare it with the skirts of earlier fashions—the hoop-skirt—the elaborate draperies that accompanied the bustle, the full skirt that was stiffened into enormous size by crinoline and horsehair linings, the plaited skirt with yards and yards of excess material, the trailing skirt that gathered dust and filth from the street. In any such comparison the modern skirt is a triumph of common sense, comfort, simplicity, neatness, and health.

By "the modern skirt" *The Companion* does not mean the dangerous and ridiculous "hobble" skirt, or the skirt that has to be slit at the side to enable the wearer to walk; but the skirt that clears the ground by two or three inches, and contains only a half or a third as much material as its predecessors.

The new fashion does not distort the figure. For the first time in many years, women wear no absurd hump in any part of their toilet—no bustle, no puffed sleeves, no ruff, no pompadour. With the lighter skirt has come also the one-piece dress, which allows the weight to fall from the shoulders. That is a great gain.

The whole tendency of the change is away from the distorted and the artificial, toward the freedom, simplicity, and beauty of the Greek costume—a tendency not imitative but adaptive. As such, the change has much to commend it. It is in the abuse of the new fashions, not in the use of them, that immodesty lies.

The above reminds me that nearly all my life I have been protesting against the absurd and silly fashions for women's dress. When I was in my teens I sometimes quarreled with my sisters, and with girls with whom I was intimately acquainted, because of tight lacing simply because it was "the fashion." Then when bustles came in vogue, where they could not afford a manufactured bustle some of the girls wore folded newspapers. Then when hoop-skirts came in, I scolded more, especially when they were so large that a woman could not get through an ordinary doorway without tilting them up. The fashion of "tight lacing" I have objected to all my life; and I had almost forgotten it until the *Youth's Companion* mentioned it, that tight lacing seemed to be finally out of fashion. God grant that it has gone for ever. I believe the best authorities in regard to the care of these bodies of ours say that nothing should be tight enough to impede free circulation; and right along this line for the best development of health there must be abundant ventilation. I have had considerable to say recently in regard to ventilating the feet. Whenever your feet get hot and sweaty, it is nature's protest, and a demand for more air; and so with other parts of the body. Now, if the modern style of women's dress is going to give them something sensible in that direction, and is going to give the mothers of our land better bodies, and enable them to give the world healthier children, shall we not thank God and be a little slower about criticising and finding fault?

Last, but by no means least, the modern

skirts are a saving in cloth, and in that way it is a saving in expense. I think Mrs. Root said that some of the former fashions required three times the amount of cloth that is used now. And besides the money saved, there is less weight to be carried about. Not very long ago I spoke of getting rid, not only of every pound but of every ounce that can be readily spared in going about your work, especially in mild or hot weather. Old people especially will find their strength will hold out ever so much better or longer when they get rid of useless clothing or useless weight in the clothing. Select something that protects from the weather, and which weighs just as little as possible. In fact, I would not mind paying a pretty good price for something that gives protection with the least possible avoirdupois weight to be carried about. Notice how farmers get rid of surplus garments when working in the harvest-field. Of course, we do not all work in the field in that way. But all of us should have some muscular exercise every day of our lives, and all useless clothing should be laid aside, and, so far as possible, let us have this exercise out in the sun and open air, with just as little clothing as comfort and a reasonable degree of decency will admit.

"Running a Bill."

It seems economical, but really it is not. You feel that because you are not parting with cash at the moment, you are temporarily saving money; and you are usually sure that when the bill comes in you will be better off financially than you are at the moment. Of course this idea is delusive; you find on the first of the next month that the bills are larger and the accumulated fund less than you had expected.

Running a bill is subtly demoralizing. When you open a new account, you are scrupulous to pay the bill very soon after it is rendered; you wish to impress your creditor with the fact that you are an uncommonly desirable patron. After a while you feel that he has learned this fact, and you let him wait for his check while you impress a new set of creditors with your punctuality—and solvency. So you keep putting off and putting off the creditors who are "old friends" until finally it becomes a scramble to prevent their sending in an account headed by that discouraging item, "Bill rendered." When you sink into the "bill rendered" class, you have entered the second stage of indebtedness. The third is marked by the receipt of dunning letters, the fourth by personal visits from collectors, the fifth by menacing communications from lawyers.

It is difficult for men and women who have the habit of "charging" every thing to put aside money for investment. They have adopted a costly way of living. The ability to purchase what you will, although your pockets are empty, is an expensive luxury. The shops that permit charge accounts are the shops that ask high prices; a charge account usually means that you pay from five to ten per cent more for a thing than its cash value.

If you adopt the pay-as-you-go principle, you will considerably reduce your own high cost of living.—*The Youth's Companion.*

Now! These New Engine Prices

Direct from
Factory
to
User



2 H-P, \$39.45
4 H-P, 75.50
6 H-P, 99.35
8 H-P, 139.65
11 H-P, 208.90
20 H-P, 389.50
Other Sizes up to 40 H-P,
Proportionally Low.

WITTE Engines

Kerosene, Gasoline and Gas

Stationary, (skidded or on iron base), and Mounted Styles, Standard the world over for 27 years. Better today than ever. Why pay double price for a good engine, or take a poor or doubtful one for any price, when the WITTE costs so little and saves all risk?

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Direct from Factory to Users, for cash or on easy terms, at prices hitherto unheard of, for engines of these merits: Long-wearing, semi-steel, separable cylinders, and four-ring pistons; all vertical valves; automobile ignition; spark shift for easy starting; variable speed; and others, without which no engine can now be high-grade. I am simply sharing my manufacturing advantages with engine buyer-users—asking only one small factory profit.

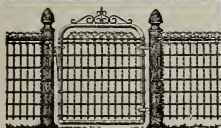
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The most easy-to-understand engine book in the business. Gives the "inside" of engine selling as well as manufacturing. Shows my liberal selling plans with complete price list. Write me your full address for my prompt reply.

Ed. H. Witte, Witte Iron Wks. Co.
1931 Oakland Ave., Kansas City, Mo.



MASON'S LAWN FENCE



6¢ PER FT.

Lawn Gates only \$2.25. Close wove 48 in. Stock and Poultry Fence 27¢ a rod. Heavy 49 in. Field Fence 24¢ a rod. Hog Fence 14¢ a rod. Barb Wire \$1.40 a spool. 60 days' trial.

We not only lead on prices but on quality as well. Our great FREE Catalog proves it. Write for it today. It saves you money. The Mason Fence Co., Box 88 Leesburg, O.

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FACTORY
TO FARM



26-inch Hog Fence,....14c.
41-inch Farm Fence,....21c.
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80-rod spool Barb Wire, \$1.40

Many styles and heights. Our large Free Catalog contains fence information you should have.
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FARM FENCE

41 INCHES HIGH
100 other styles of
Farm, Poultry and
Lawn Fencing direct
from factory at save-the-
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CENTS
A ROD**

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BUY YOUR FURNACE \$10 DOWN \$10 A MONTH



Our monthly payment plan of selling direct saves you the dealer's profits and excessive charges for installation. The

JAHANT FURNACE

with the patented "DOWN DRAFT SYSTEM" is the best for residences, schools, hotels, churches, etc. Saves 1-3 to 1-2 in fuel bills. Install the Jahan yourself. We send complete outfit, freight prepaid with special plans, detailed instructions and all necessary tools for installation. Satisfaction guaranteed or money refunded. Thos. I. Flaherty, Hamilton, N. Y., writes: "Best furnace made. Had no trouble to install it. Had it up and fire started in 12 hours." Write for Free Illustrated Book. THE JAHANT HEATING CO., 30 Main St., Akron, O.

Save 1/3 to 1/2 on Fuel Bills



RANGER BICYCLES

Have imported roller chains, sprockets and pedals; New Departure Coaster-Brakes and Hubs; Puncture Proof Tires; highest grade equipment and many advanced features possessed by no other wheels. Guaranteed 5 yrs.

FACTORY PRICES direct to you are less than others ask for cheap wheels. Other reliable models from \$12 up. A few good second-hand machines \$3 to \$8.

10 DAYS' FREE TRIAL

We ship on approval, anywhere in U.S., without a cent in advance. DO NOT BUY a bicycle or a pair of tires from anyone at any price until you get our big new catalog and special prices and a marvelous new offer. A postal brings everything. Write it now. TIRES, Coaster-Brake Rear Wheels, lamps, parts, sundries, half usual prices.

Rider Agents everywhere are coinng money selling our bicycles, tires and sundries. Write today.
MEAD CYCLE CO., Dept. H-113, CHICAGO

DOUBLE SPRAYING RESULTS

by saving half the solution and labor with the
"Kant-Klog" Sprayer

Nine different sprays from same nozzle—round or flat—coarse or fine—starts and stops instantly. Ten different styles.

Mail postal for special offer. Agents wanted.

Rochester Spray Pump Co.
207 Broadway, Rochester, N. Y.



THE "BEST" LIGHT



One burner will give as much light as ten ordinary oil lamps; six 16 candle power electric bulbs—six 16 candle power gas jets or 5 acetene gas jets. Costs 2 cts. per week. Produces a pure, white, steady, safe light. Over 200 styles. Every lamp warranted. Agents wanted. Write for catalog.

THE BEST LIGHT CO.
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850,000 GRAPE VINES

69 varieties. Also Small Fruits, Trees, etc. Best rooted stock. Genuine, cheap. 2 sample vines—10c. Descriptive price list free. Lewis Roesch, Box K, Fredonia, N. Y.

BROWN Direct from
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160 styles for every
purpose, all Double gal-
vanized. 13c per rod up. New
Bargain Catalog and Sample to test.
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FENCE



THE Coward Good Sense Shoe

Keeps growing feet shapely, straightens ankles that "turn in," helps weak arches, corrects and prevents "flat-foot."

Coward Arch Support Shoe and Coward Extension Heel made by James S. Coward for over 33 years.
FOR CHILDREN, WOMEN AND MEN.
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PRATT'S HAND-BOOK for FRUIT GROWERS

There will NEVER be enough number one apples—ALWAYS too many cider apples. Don't waste your time and your trees growing inferior grades. Use "Scalecide" the one sure spray for San Jose scale, and produce number one fruit. "Scalecide" is 100% efficient against scale and has marked fungicidal properties. Used by best orchardists the world over. Endorsed by Experiment Stations. Our SERVICE DEPARTMENT furnishes everything for the orchard. Write today to Dept. 6, for new booklet—"Pratt's Hand-Book for Fruit Growers" and "Scalecide the Tree Saver." Both free.

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Write for Free Book on Spray-ing

Brown's Auto Spray

use these wonderful sprayers to rid fields, fruit trees, gardens of blight, disease and insects—to make all produce big. Auto Spray No. 1—Capacity 4 Gallons. Auto Pop Nozzle throws from fine mist to drenching stream. Does not clog. 40 styles and sizes of Hand and Power Outfits. Large sprayers fitted with


Non-Clog Atomic Nozzle

only nozzle that will spray any solution for days without clogging. Fits any make of sprayer. Write for valuable **Spraying Guide Free.**

The E. C. Brown Co., 20 JAY ST., ROCHESTER, N. Y.

Keep Ants Away

They will not attack or come near woodwork if it is painted with **AVENARIUS CARBOLINEUM** REGISTERED and will stay away from beehives so protected. Write for circulars. Carbolineum Wood Preserv'g Co Dept. 103, Milwaukee, Wis.



Hill's Evergreens Grow

Best for windbreaks. Protect crops and stock. Keep house and barn warmer—save fuel—save feed. Hill's evergreens are hardy, nursery-grown—low priced. Get Hill's free illustrated evergreen book and list of Great Bargain Offers—from \$4.50 up per Thousand. 56 years experience. World's largest growers. Write.

H. HILL NURSERY CO., Inc. Evergreen Specialists.
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I Stand Behind EVERY Buggy I Make

Every vehicle I sell you is made of the finest, toughest, most sinewy Second-Growth Hickory—split, not sawed. You can't be dissatisfied. I guarantee them all to the limit!



Two Year Guarantee 30 Day Free Road Test

And, in addition to all that, my Direct-to-You Plan saves you \$25 to \$40 on every vehicle I make.

This book shows 125 styles for 1914.



SEND YOUR NAME ON A POSTAL FOR MY BIG BOOK

Get the facts regarding buggy prices. Get a buggy that will make your neighbors green with envy—and pay \$25 to \$40 less for it.

H. C. Phelps, Pres. THE OHIO CARRIAGE MFG. CO., Station 293, Columbus, Ohio

THALE'S REGULATIVE VACUUM BEE-FEEDER

**The Coming Feeder of the Day.
Gives Perfect Satisfaction Everywhere.**

New Ulm, Texas, March 26, 1914.

Mr. H. H. Thale, Maywood, Mo.:—I received the feeders. I tell you it is the best feeder I have seen so far, and the best one that's out. I could have sold mine directly to a bee-keeper; but I gave him your address, and also the price list of your feeders. He said he surely would have some feeders of your kind. I am truly yours, ALEX. A. KANTZ.

I am truly yours, ALEX. A. KANTZ,
Breeder of choice Italian queens.

Let me double your honey crop by stimulative brood-rearing — the most practical method known. Send me your order to-day. Satisfaction guaranteed or money refunded.

TERMS, CASH WITH ORDER

Sample Feeder, with 2 bottles complete, mail postpaid,	\$.55
10 Feeders, complete with 10 bottles, freight or express,	3.00
25 " " 25 " " " "	7.50
50 " " 50 " " " "	15.00
Extra bottles with cork valve, each,	.10

FEED INDICATOR

H. H. THALE, INVENTOR AND MANUFACTURER **Box G25, MAYWOOD, MISSOURI**


Eastern Buyers Send Orders to Earl M. Nichols, Lyonsville, Mass.; B. H. Masters, Edison, Ohio, and Harry W. Martin, New Holland, Pa. Western Buyers Send Orders to D. B. Hersperger, Ordway, Colo.

The IRWIN Bit
Reg. U.S. Pat. Office

Stamped on the
shank of every
genuine IRWIN
BIT.

and true. That's
the Irwin.

You want a bit that you can rely on—one that's right in pattern, right in temper—that bores clean, fast.



But be sure you get a *genuine* Irwin. Don't be fooled by a similarity in pattern, but look for the trade mark illustrated above, *on the bit*.

"Genuine IRWIN cuts true, clear thru."

THE IRWIN AUGER BIT CO.

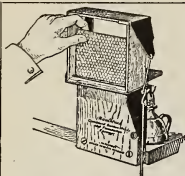
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L I S T E R I N E .

AFTER brushing the teeth, it is important that the mouth be thoroughly rinsed with a good mouthwash. Listerine is the ideal antiseptic preparation. It cleanses and purifies and is exceedingly agreeable and refreshing. Use it every day.

All druggists sell Listerine.

LAMBERT PHARMACAL COMPANY, St. Louis, Mo.



DECREASE THE COST OF PRODUCING COMB HONEY by Using the Rauchfuss Combined Section Press and Foundation Fastener.

Put up your sections in half of the former time. Not an untried novelty. The old-style machine is used by hundreds of Western comb-honey specialists; the new machine is better and cheaper. By parcel post anywhere in the U. S., \$3.00. Satisfaction guaranteed or your money back. Write to-day for illustrated circular to

The Colorado Honey Producers' Association, 1440 Market Street, Denver, Colorado

QUEENS FROM CARAWAY'S PRIZE-WINNING STOCK

THREE-BANDED ITALIANS READY TO MAIL NOW

Italians	After April 15				After May 10				After June 10		
	1	6	12	100	1	6	12	100	1	6	12
Untested..	\$1.00		10.00	75.00	\$.90	\$4 50	9.00	70.00	\$.70	\$4.00	\$7.75
Tested. ...	1.25	6 00	12.00		1.00	5 00	10 00				

Select tested, April 1 till Nov. 1, \$2.00 each. Breeders, \$5.00 each. Bees for the pound, after May 10, 1 lb. for \$2.00; 10 lbs., \$18.00; 100 lbs., \$170.00. Add to these the price of queen or queens; safe arrival guaranteed within five days' journey of Mathis.

My three-banded Italians captured first prize again at Dallas State Fair and the Cotton Palace Fair at Waco. This speaks for itself. None better.

My Stock.—I secured the best stock obtainable; and when you pay more than my prices you are paying that much extra. I sell nothing but good queens. None better. I positively guarantee my queens to please. No foul brood or other diseases.

B. M. CARAWAY, MATHIS, TEXAS

References: Mathis First State Bank and The A. I. Root Company

Queens and Bees

We are now booking orders for our celebrated Leather-colored and Golden Italian Queens. Bees in $\frac{1}{2}$, 1, and 2 lb. packages. Nuclei in 1, 2, 3, or 5 frame, either on Danz. or Hoffman frames. Full colonies in 8 or 10 frame L. hives or Danz. 10-frame hives. Write at once for special card of prices, and book your order with us early.

Letter of endorsement to us from The A. I. Root Co.:

Medina, Ohio, Feb. 6, 1914.

The Penn Co., Penn, Miss.:

Replying to yours of Feb. 3, we would state that we have bought a large number of queens of you. We have found them uniformly marked, and of a good stock; in fact, they are first-class in every respect. Another thing, we have always found that you make prompt deliveries, or give us notice promptly when such deliveries could not be made.

THE A. I. ROOT CO.,

by E. R. Root, Vice-president.

Get our prices at once. . . . The largest queen and bee yards in the South.

The Penn Co., Penn, Mississippi

QUEENS!

Quirin's Improved Superior Italian Bees and Queens. . . . They are Northern Bred and are Hardy. . . . Over 20 Years a Breeder.

	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested . . .	1.00	5.00	9.00	.75	4.00	7.00
Tested	1.50	8.00	15.00	1.00	5.00	9.00
Select tested	2.00	10.00	18.00	1.50	8.00	15.00
2-comb nuclei	2.50	14.00	25.00	2.25	12.00	22.00
3-comb nuclei	3.50	20.00	35.00	3.25	18.00	32.00
8-frame colony	6.00	30.00		5.00	25.00	
10-frame colony	7.50	38.00		6.50	32.00	
1-2 lb. pkg. bees	1.50	7.00		1.00	5.00	
1-lb. pkg. bees	2.00	10.00		1.50	8.00	

BREEDERS—the cream selected from our entire stock of outyards; nothing better. These breeders \$5.00 each.

Can furnish bees on Danzenbaker and L. or Hoffman frames. Do not write for lower prices even if you want 1000 queens or 100 colonies. Price is already low, considering the quality of our stock and prompt service.

Above price on bees by pound, nuclei, and colonies, does not include queen. You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out till first of June. Also nuclei and colonies, if wanted before June 1st, add 25 per cent to price in table.

Breeders, select tested, and tested queens can be sent out as early as weather will permit.

Send for testimonials. Orders booked now.

H. G. Quirin - the - Queen - Breeder
BELLEVUE, OHIO

GOLDEN ITALIAN Queens

Reared from straight five-band mothers, mated with select golden drones, $3\frac{1}{2}$ miles from three-band apiary. These queens are large, vigorous, and prolific; the bees gentle and hustlers, and are noted throughout the U. S. as a disease-resisting strain. Purity of mating, safe arrival, and satisfaction guaranteed.

QUEENS	May 1st to June 1st			June 1st to July 1st			July 1st to Nov. 1st		
	1	6	12	1	6	12	1	6	12
Untested	\$ 1.25	\$ 6.50	\$11.50	\$ 1.00	\$ 5.00	\$ 9.00	\$.75	\$ 4.00	\$ 7.50
Select Untested.....	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Breeders, \$5.00 to \$10.00.

Queens for export will be carefully packed in long-distance cages, but safe arrival is not guaranteed.

BEN G. DAVIS, SPRING HILL, TENNESSEE

W. H. LAWS

is prepared to take care of all your queen orders the coming season.

Twenty-six years of careful breeding places Laws' queens above the usual standard.

My bees, in my own and in the hands of others, have taken first premiums at the leading fairs all over the United States; and, in the hands of single individuals, have gathered over a car of honey in one season.

Tested queens ready now. Each, \$1; 12 for \$10. Untested, after April 15, breeding queens, about fifty of the finest ready at any time; each, \$5.00.

W. H. LAWS, Beeville, Bee Co., Texas

Taylor's 1914 Three-banded ITALIAN QUEENS

Now ready to mail: 26 years' careful breeding for the best honey-gatherers. None better. Prolific, and honey-getters. We fill all orders promptly. Untested, \$1.00 each, or \$10 a dozen. Tested, \$1.25 each, or \$12.00 a dozen. Select tested, \$1.50 each or \$15.00 a dozen. Breeders, the best, \$5.00 each. Send all orders to

J. W. TAYLOR & SON, Beeville, Bee Co., Texas

SAVE YOUR QUEENLESS COLONIES

Introduce a vigorous tested queen. We can supply them by RETURN MAIL for \$1.00 each.

UNTESTED queens, ready April 15, single queen, \$1.00; \$9.00 per dozen. No disease. Satisfaction guaranteed.

J. W. K. SHAW & CO., LOREAUVILLE, LOUISIANA

DOOLITTLE & CLARK

are booking orders for choice Italian Breeding Queens, ready to be sent out about May 1. Send for circular.

MARIETTA, Onondaga Co., New York

Marchant's Island Bred Queens

Bred from selected mothers, and mated to isolated drones of a different strain. My aim is quality and not quantity. So if you want any of these choice purely mated three-banded Italian queens order now or you may not get them as I am going to rear only a limited number. No disease, and your money back if not satisfied. The A. I. Root Co. use my queens, which is proof of their quality.

No need to write for lower prices.

Reference, The American Exchange Bank of this city.

Prices—Untested, single, \$1.50; 6 for \$6.00; 12 for \$10.00; in lots of 25 or more, 75 cts. each. Select tested, \$3.00. Breeders, \$5.00 and \$10.00.

A. B. Marchant, . . Apalachicola, Florida

Extra Select Tested Queens \$2.50 Each

Will make good breeders. Guaranteed to give satisfaction. Untested queens, 75 cts. each; \$7.50 per dozen. Tested, \$1.50. Choice breeders, \$5.00. Nuclei, \$1.25 per frame, good supply of bees. Half pound bees with queen, \$2.00. Bees, \$1.50 per lb., no queen; full weight. Full colony in eight-frame hive with queen, \$6.50; in ten-frame, \$7.50. Best mail and express service in the South. Only 12 hours to St. Louis, Mo.

THE STOVER APIARIES, MAYHEW, MISSISSIPPI



BUY CARNIOLANS IN CARNIOLA

Pure Carniolan Alpine bees. Write in English for booklet and Price list. . . . Awarded 60 honors.

JOHANN STRGAR, . . Wittnach

P. O. Wechoiner Feistritz, Upper Carniola (Krain), Austria

Archdekin's FINE ITALIAN QUEENS

THREE BANDED

Bred for Persistent Profitable Production of Honey. Prolific, hardy, gentle. The bee for pleasure or profit. One customer says, "Your queen soon had her ten frames running over with bees that are hustlers." Cells built in strong two-story colonies, and mated by best-known methods. No disease. Satisfaction guaranteed. Orders filled promptly. Ready May 20. Untested, \$1.00 each; six for \$5.50; dozen, \$10.00. Select tested, \$2.00 each.

J. F. Archdekin, Rt. 7, St. Joseph, Mo.

Classified Advertisements

Notices will be inserted in these classified columns at 25 cents per line. Advertisements intended for this department can not be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the Classified Columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

FOR SALE.—Finest quality buckwheat honey in cans and kegs. Clover honey all sold.
C. J. BALDRIDGE, Kendaia, N. Y.

FOR SALE.—No. 1 white comb, \$3.00 per case; fancy, \$3.25; 24 Danz. sections to case, six cases to carrier.
WILEY A. LATSHAW, Carlisle, Ind.

FOR SALE.—3000 lbs. of fine extracted honey in 60-lb. cans, 9 cts. per lb. GEORGE RAUCH, Orange Mountain Bee Farm, Guttenberg, N. J.

No. 1 aster honey, delicious flavor; fine for table use. In 60-lb. cans, 7 cts., f. o. b. Brooksville.
H. C. LEE, Brooksville, Ky.

HONEY AND WAX WANTED

WANTED.—Comb, extracted honey, and beeswax.
R. A. BURNETT & Co., 173 So. Water St., Chicago.

WANTED.—Comb honey and beeswax. State what you have and price.
J. E. HARRIS, Morristown, Tenn.

WANTED.—Honey, extracted and comb. Will buy or handle on commission. Beeswax—will pay highest price. HILDBRETH & SEGELKEN, New York, N. Y.

WANTED.—Best grade white-clover and buckwheat extracted honey in cans or small barrels; the square five-gallon can, two cans to the case, preferred. Send sample, and quote best cash price delivered f. o. b. Medina, also f. o. b. Chicago, Ill. Can use quite a large quantity of both grades.

THE A. I. ROOT CO., Medina, Ohio.

FOR SALE

FOR SALE.—A full line of Root's goods at Root's prices.
A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Full line of Root's goods at factory prices.
E. M. DUNKEL, Osceola Mills, Pa.

FOR SALE.—Full line of Root's goods at factory prices.
ELMER W. PALMER, Catskill, N. Y.

SIXTY-DAY SEED OATS. Heavy yielders. Very early, including a clover catch. Re-cleaned. Sacks free. 90c. 10 bu. or over, 75c. GAIL T. ABBOTT, Rt. 3, Medina, O.

New crop of extra-fine quality alfalfa seed, \$6.50 per bushel; sacks, 25 cts. extra; also some sweet-clover seed.
R. L. SNODGRASS, Augusta, Kan.

FOR SALE.—Better hives for less money. Beekeepers' supplies and standard-bred Italian bees. Write for catalog.
A. E. BURDICK, Sunnyside, Wash.

FOR SALE.—Root's goods at factory prices. Fresh stock and prompt accurate service. Let's get acquainted.
L. W. CROVATT, box 134, Savannah, Ga.

"Root" bee supplies, "American" honey-cans, and "Weed Process" foundation exchanged for beeswax and honey. Cash prices on request.

SUPERIOR HONEY CO., Ogden, Utah.
(Branch at Idaho Falls, Idaho.)

FOR SALE.—Empty second-hand cans, two cans to the case; good as new; 25 cts. per case.

C. H. W. WEBER & Co., Cincinnati, Ohio.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap.
WHITE MFG. CO., Greenville, Texas.

We are among the largest growers of alsike clover in this country, and offer good clean seed. Bushel, \$11.00; half bushel, \$5.75; peck, \$3.00.
C. J. BALDRIDGE, Homestead Farm, Kendaia, N. Y.

The A. I. Root Co.'s Canadian House, Dadant foundation, bees, queens, honey, wax, poultry supplies, seeds. Write for a catalog. THE CHAS. E. HOPPER CO., 185 Wright Ave., Toronto, Ontario.

FOR SALE.—Smokers and feeders slightly damaged by flood, at one-half catalog price. Bargains. Mention what you want and enclose remittance. We reserve right to substitute.

E. W. PEIRCE, Zanesville, Ohio.

FOR SALE.—22 1½-story second-hand Danz. hives, brood-frames, and section-holders, practically good as new; \$1.50 each, ½ of list price; 5 one-story, \$1.00. Bees were transferred; combs and frames boiled to melt wax. No disease.

A. MOTTAZ, Utica, Ill.

WANTS AND EXCHANGES

WANTED.—To buy bees.

B. F. HOWARD, Tyre, Mich.

WANTED.—Bees for cash. Give particulars and price.
E. MACK, 3318 N. Nagle Ave., Chicago, Ill.

WANTED.—To buy a yard of bees in Eastern New York.
O'CONNELL, 571 39th St., Brooklyn, N. Y.

WANTED.—To buy one or more apiaries in a good location.
A. CARDEE, Constance, Ky.

WANTED.—Bees in lots of 25 to 300 colonies, preferably within 250 miles of Detroit, Mich.
A. W. SMITH, Birmingham, Mich.

TO SELL OR WORK ON SHARES.—Small bee-farm in good shape for increase. Write for particulars.
W. T. KEESE, Rt. 3, Cardington, Ohio.

WANTED.—To sell untested queens from my superior clover-strain Italians in quantities.
I. F. MILLER, Brookline, Pa.

Will exchange three 50-egg cycle hatchers, like new, for bees.

G. SCHRADER, Queens Blv., Elmhurst, N. Y.

Fine Buff Orpington hens, exhibition birds, bred from Madison Square winners, trap-nested, finest quality. Will exchange for Italian bees.
S. E. WASSON, Rome, Ga.

WANTED.—Best offer on thirty 12-section safety cases of No. 1 to fancy clover-heartsease honey placed in our hands for disposal. Color light as average clover.
E. W. PEIRCE, Zanesville, Ohio.

TO EXCHANGE.—Ping-pong and cabinet; 4 x 7 studio camera with stand; fine Voightlander studio lens; value of outfit with above lens, \$45.00. Will sell for cash, \$38.00, or exchange offers for bees and poultry or honey.

C. L. HILL, May's Landing, N. J.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1914. Our catalog and price list will be mailed to you free. Order early and get the discounts.

C. E. SHRYVER, Boise, Idaho.

REAL ESTATE

FOR SALE.—Well-established paying bees and poultry plant near Chicago. P. AUGUSTIN, Orland, Ill.

Virginia fertile farms, \$15 an acre up. Easy payments. Send names of two friends interested in Virginia, and receive our beautiful magazine one year free. F. H. LABAUME, Agr'l Agt., Norfolk & Western Ry., Room 246, N.&W. Bldg., Roanoke, Va.

Alfalfa, Corn, and Hogs are rapidly making farmers in the Southeastern States wealthy. The South is the new "corn belt" and the natural realm of "king alfalfa." Act quickly while land prices are so extremely low, values rapidly advancing. Farm lists and "Southern Field" magazine sent free. M. V. RICHARDS, Land and Ind. Agt., Southern Ry., Room 27, Washington, D. C.

BEES AND QUEENS

Phelps' Golden Italian Queens will please you. C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

Pure Italian bees or their hybrids, in L. 10 frames, wired, full foundation, 1 or 100. JOS. WALRATH, Antioch, Cal.

Connecticut queens, 3-banded Italians only; large and vigorous; ready May 15. Price list. W. K. ROCKWELL, Bloomfield, Ct.

Golden Italian queens, about May 1. Tested, \$1; select, \$1.25; untested, 70 cts. each; dozen, \$8.00. D. T. GASTER, Rt. 2, Randleman, N. C.

Golden yellow Italian queens my specialty. Untested, \$1.00; tested, \$1.50. Ready April 1. Safe arrival guaranteed. E. A. SIMMONS, Greenville, Ala.

Leather-colored Italian queens June 15. Circular free. No foul brood. 1, 85 cts.; 6, \$4.50; dozen, \$8.00. D. G. LITTLE, Hartley, Iowa.

Three-frame nucleus for sale with queen, \$2.50; 3 or more, \$2.25, on Langstroth frames; commence to ship about May 15. W. H. STANLEY, Dixon, Ill.

Phelps' Golden Italian Bees are hustlers. C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

FOR SALE.—200 colonies of Italian bees at \$5.00 per colony. G. H. ADAMS, Spring and Central Ave., Troy, N. Y.

Three-band Italian queens. Tested, \$1.00; untested, 75 cts. Ready May 15. S. CLICK, Mt. Jackson, Va.

Golden Italian queens, \$1.25 each; six for \$6.00; untested; 10th to 15th April. J. B. CASE, Port Orange, Fla.

FOR SALE.—40 colonies Italian bees in ten-frame Langstroth hives, wired Hoffman frames. No disease. J. B. RATCLIFFE, Amboy, Minn.

FOR SALE.—50 to 75 colonies; strong in bees and honey, free from disease, in L. hives, at Oakfield, Wis. Address B. W. WELLS, Grand Rapids, Wis.

FOR SALE.—Italian bees, 1 lb. with queen, \$2.25; 1 frame with queen, \$2.00. Queens 75 cts. each. Safe delivery guaranteed; 30-page catalog with beginner's outfit, for stamp. THE DEROY TAYLOR CO., Newark, N. Y., (formerly Lyons).

FOR SALE.—Ten-frame Root chaff hives complete. True-bred Italian bees, wintered outdoors, fine condition, cheap. Retiring from business. DR. JOHNSTON, Suffern, N. Y.

FOR SALE.—18 Italian swarms free from disease; preferably in lots of five or more. Prices, \$5.00 and \$7.00, according to hive. E. R. THOMAS, Nashotah, Wis.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1.00; 6 for \$5.00. WM. S. BARNETT, Barnett's, Va.

FOR SALE.—Italian queens, bees by pound. Descriptive list free. Apiaries under State inspection. Leaflets, "How to Introduce Queens," 15 cents; "How to Increase," 15 cents; both 25 cents. E. E. MOTT, Glenwood, Mich.

My queens are bred from imported mother. For gentleness and honey-gathering they are unexcelled. Untested, 1, 75 cts.; 6, \$4.25; 12, \$8.00. Safe arrival. Address W. J. FOREHAND, Ft. Deposit, Ala.

1914 QUEENS.—Moore's strain of leather-colored Italians in April at 75 cts. Also bees by the pound, nuclei, tested queens. Write for prices on nuclei. Address OGDEN BEE AND HONEY CO., Ogden, Utah.

FOR SALE.—50 full colonies pure Italian bees in eight-frame Dovetailed hives with Hoffman frames at \$6.00 each. All queens last-year Moore. Hives in good condition, painted. No disease. F. A. GRAY, Redwood Falls, Minn.

Queens and bees for sale.—See our large advertisement elsewhere in this journal, and read The A. I. Root Co. letter to us regarding our queens. Write at once for large bee and queen circular. THE PENN CO., Penn. Miss.

Golden Italian queens that produce golden bees, the brightest kind, gentle, and as good honey-gatherers as can be found. Each, \$1.00; six, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00. J. B. BROCKWELL, Barnett's, Va.

Queens ready in May. J. E. Hand strain of three-band Italians, bred for gentleness, honey-gathering, wintering, and long life. Write for price list and free booklet, How to Transfer, Get Honey and Increase. J. M. GINGERICH, Arthur, Ill.

Phelps' Golden Italian Queens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; six, \$5.00; tested, \$3.00; breeders, \$5.00 and \$10.00. C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

Golden and three-band Italian and Carniolan queens ready to ship after April 1. Tested, \$1.00; 3 to 6, 95 cts. each; 6 to 12 or more, 90 cts. each. Untested, 75 cts. each; 3 to 6, 70 cts.; 6 or more, 65 cts. each. Bees, per lb., \$1.50; nuclei, per frame, \$1.50. C. B. BANKSTON, Buffalo, Leon Co., Tex.

Golden and three-banded Italians, ready March 1. They have been bred for three points—prolificness, gentleness and honey-gathering qualities. Select untested, each, 75 cts.; six, \$4.25; 12, \$8.25; 50, \$32.50; 100, \$60.00. Tested, \$1.50; select tested, \$2.00; three-banded breeders, \$4.00; golden breeders, \$5.00. GARDEN CITY APIARY CO., Rt. 3, Box 86, San Jose, Cal.

Try Forehand's three-band Italian queens. They are raised from imported stock, unexcelled for honey and gentleness. One untested, 75 cts.; 6, \$4.25; 12, \$8.00. Send me your order; and if not satisfied I will return money. Safe arrival.

N. FOREHAND, Rt. 2, Brewton, Ala.

FOR SALE.—California Italian queens, Goldens, and Three-banders by return mail after March 15; select untested, 75 cts.; 12, \$8.00; tested, \$1.00; breeders, \$3.00. Bees by the pound a specialty, ready April 1; 1 lb., \$1.25; 2 lbs., \$2.25; large lots, less. Booking orders now. Deliveries and satisfaction guaranteed. Correspondence solicited. Circular free. J. E. WING, 155 Schiele Ave., San Jose, Cal.

GOOD QUEENS.—Good queens are a real necessity in any apiary if best results are to be expected. The old leather-colored three-band Italians have proven themselves to be the best general-purpose bee extant. These I can supply in any quantity you may wish. Untested, \$1.00 each; \$4.25 for six; \$8.00 per doz. Safe arrival and satisfaction. All orders will have prompt attention. E. J. ATCHLEY, Bloomington, Cal.

FOR SALE.—Swarms of young Italian bees in packages. Replace winter losses and strengthen weak colonies with healthy young bees; ½-lb. packages, 90 cts. each; 1-lb. packages, \$1.25 each; 2-lb. packages, \$2.45 each. Young untested Italian queens, the three-banded hustlers, 75 cts. each. We guarantee safe arrival. No disease. For large quantities write for wholesale prices.

BROWN & BERRY, Hayneville, Ala.

BEES AND QUEENS.—Queens bred from Doolittle's best stock, untested, 60 cts. each; \$6.50 per dozen; \$50 per 100. Same stock of year-old queens removed from our colonies to prevent swarming, 50 cts. each; \$5.40 per dozen; \$40 per 100. Delivery guaranteed. Nuclei, two-frame, \$1.50; three-frame, \$2.00. Add price of above queens wanted. We have a rare bargain of apiary of several hundred colonies of bees for sale on easy terms. Particulars on request. SPENCER APIARIES CO., Nordhoff, Cal.

Famous North Carolina bred Italian queens for sale.—(Red clover three-banders); honey-gatherers good as the best. Strictly reared from Geo. B. Howe's best breeders, mated with Root's, Moore's, Davis' select drones; bees that get the honey; free of disease. Untested, 1, 75 cts.; dozen, \$7.50. Select untested, 1, \$1.00; dozen, \$9.00. Tested, 1, \$1.25. Select tested, \$1.50. Extra select tested, \$2.00. Breeders, \$3.00 to \$5.00.

H. B. MURRAY, Liberty, N. C.

FOR SALE.—Early swarms at fall prices; ½ lb. bees, \$1.00; 1 lb. bees, \$1.50. Add price of queen if wanted. Untested three-band Italian queen, 75 cts. each; tested Italian queens, \$1.25 each. These are bred from best honey-gathering strain. No disease. Safe arrival and satisfaction guaranteed. This is undoubtedly the best way for Northern honey producers to increase and improve their stock. Delivery begins about April 5. Capacity, 40 swarms per day. W. D. ACHORD, Fitzpatrick, Ala.

Many men of many minds; but the minds of practical beekeepers are turned toward the old reliable three-band Italians. We have them in their purity, new blood, new importation. Untested queens from March to June, \$1.00 each; \$4.25 for six, or \$8.00 per dozen; safe arrival and satisfaction to all customers. Write for prices on large quantities. You do not have to return dead bees to us—just state it so on a postal card, and queens dead on arrival will be replaced promptly.

THE GOLDEN RULE BEE CO., Rialto, Cal.

EARLY QUEENS.—Those who desire early queens can be supplied by sending orders to us. Only three-band Italians stand the severe test against diseases, and our bees are clean. Untested queens, \$1.00 each; \$4.25 for six; \$8.00 per dozen. Always safe arrival and satisfaction to everybody. If you desire queens in large lots early, better let us book you as soon as convenient, and money can be sent when queens are wanted. Your check is good, or any way you wish to remit.

THE RIALTO HONEY CO., Box 73, Rialto, Cal.

POULTRY

Buckeye Incubators, Kant Krowd Hoover, let me tell you about them. E. O. WALTRZ, Medina, Ohio.

Eggs for hatching. S. O. White Orpingtons. Matting list free. JAS. R. LAMPSON, Box B, Medina, O.

S. C. W. Leghorn eggs, bred to weigh and lay. \$1.00 for 15. PAUL FUNK, Warsaw, Ohio.

R. C. B. Leghorns.—15 eggs, \$1.00; 100, \$3.50. Great layers. FRANK RASMUSEN, Greenville, Mich.

Stock and eggs for sale, all leading varieties; also geese and Belgian hares. Catalog free. LEVI STUMB, Richland Center, Pa.

Barred Rock eggs, \$2.00 for 15, from high-class exhibition stock, both matings. ALPLAUS BEE AND POULTRY FARM, Schenectady, N. Y.

Pure-bred Indian Runner ducks, snow-white eggs, 15 for \$1.00; 100 for \$6.00. J. C. WHEELER, 921 Austin Boul., Oak Park, Ill.

LEGHORNS.—Eggs for hatching. S. C. W. Leghorns, \$5.00 per 100; \$1.00 per 15. Send for catalog. WOODWORTH FARM, Wilton, Ct.

EGGS.—20 for \$1.00; leading varieties prize poultry, pigeons, hares, etc. Booklet free. Large illustrated catalog, 10 cts. F. G. WILE, Telford, Pa.

Sicilian Buttercups. One utility flock. Eggs, \$2.50 per 15; unsatisfactory hatches replaced at half price. WALTER M. ADEMA, Berlin, Mich.

FOR SALE.—Sicilian Buttercup eggs for hatching, \$2.00 per 15 eggs.

L. S. GRIGGS, 711 Avon St., Flint, Mich.

S. C. White Minorcas, \$3.00 per 15; R. C. Buff Leghorns, S. C. Brown Leghorns, and Partridge Wyandottes, \$1.00 per 15.

HILLCREST FARMS, Winchester, Ind.

Corning Strain direct, S. C. W. Leghorn eggs and day-old chicks for sale. The strain that weigh, lay, and pay. Also B. P. Rocks at farmer's prices. F. J. ARMSTRONG, Nevada, Ohio.

Runner Duck Eggs.—Fawn, white-egg strain, \$1 per 12 eggs. Single-comb R. I. Red eggs, and day-old chicks. Tompkins strain.

SARAH WIDRIG, Rt. 29, Burt, N. Y.

S. C. W. Orpington eggs, 15, \$3.00; 30, \$5.00; direct from Kellerstrass ancestors of "Peggy, \$10,000 hen." Also Indian Runner duck eggs, 10 cts. each, white and fawn. I. F. MILLER, Brookville, Pa.

WHITE WYANDOTT S.—From heavy laying strain, \$2.00 and \$3.00 per setting. Two matings, both headed by Cleveland 1914 winners.

N. P. NICHOLS, Medina, Ohio.

Royal Blue Orpingtons, Nicholson strain. Blue Andalusians; also pure-white Indian Runner ducks, blue-ribbon winners. Eggs for sale. Write me for special prices and description.

H. R. ROHR, Buckhannon, W. Va.

Eggs from blue-ribbon stock of the famous American Standard I. R. ducks. The greatest layers known. Eggs, \$1.00 per dozen.

H. C. LEE, Brooksville, Ky.

Runner and Pekin Ducklings and hatching eggs. White-egg strain, Blue-ribbon stock. Also drakes. Catalog for stamp.

THE DEROY TAYLOR CO., Newark, N. Y.

SICILIAN BUTTERCUPS.—World's champion layers. Lay large white eggs. Very handsome, and the tannest of all breeds of poultry; larger, and eat only half as much as Leghorns. Thoroughbred stock for sale cheap. Hatching eggs, \$2.00 per 15.

HENRY WOODWORTH, Box 505, Cheboygan, Mich.

MISCELLANEOUS

FOR SALE.— $3\frac{1}{4} \times 5\frac{1}{2}$ camera and Edison phonograph. E. B. FAY, Alexandria, Minn.

FREE CATALOG of nursery stock. Five best glad-ioli, postpaid, 30 cts.; five best dahlias, postpaid, 40 cts. M. S. PERKINS, Danvers, Mass.

FOR SALE.—Dahlia roots, 2 cts. each and up—green flowering, and 100 other colors. Soy beans, Thornless raspberry. Circular free. JACOB MCQUEEN, Baltic, Ohio.

FOR SALE.—Eastman Panoram Kodak, 4×12 ; value \$16.00; good order. Will exchange for bees by the pound and untested queens or offers. C. L. HILL, May's Landing, N. J.

HELP WANTED

WANTED.—Reliable man of good habits to work with bees the coming season. State age, experience, and wages first letter.

THE ROCKY MOUNTAIN BEE CO., Forsyth, Mont.

WANTED.—Man (married preferred) experienced in queen-raising; employment by the year on a salary and percentage.

OGDEN BEE AND HONEY CO., Ogden, Utah.

WANTED.—Young man who has had experience producing comb honey in large apiaries, to work for me coming season. Will lease all the bees good man is capable of managing for season 1915. Must be live wire and ambitious; give experience and reference. HARRY CRAWFORD, Broomfield, Colo.

BEEKEEPERS' DIRECTORY

If you need queens by return mail send to J. W. K. SHAW & Co., Loreauville, Iberia Parish, La.

Nutmeg Italian queens, leather color, after June 1, \$1.00 by return mail. A. W. YATES, Hartford, Ct.

Well-bred bees and queens. Hives and supplies. J. H. M. COOK, 70 Cortlandt St., New York.

QUEENS.—Improved red-clover Italians bred for business, June 1 to Nov. 15, untested queens, 75c each; dozen, \$8.00; select, \$1.00 each; dozen, \$10; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Boyd, Ky.

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Look to any quarter, and you will not find quite the same quality and quantity of reading-matter as in the unique combination provided by *The Youth's Companion*. In provision and purpose it is the ideal home paper. Live and wholesome fiction. Articles of inspiration by men who have achieved. Information at hand that busy people want. Enough of editorial comment, of science, and of events to keep one abreast of the day. Special Family Pages, Boys' Pages, Girls' Pages. The editorial page is unsurpassed by that of any publication. This year there are to be eight fine serials, 250 shorter stories, besides articles of travel and information, and 1000 bits of fun.

A year of *The Youth's Companion* as it is to-day will make the finest investment for your family, including all ages.

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PUBLICATIONS ON BEE CULTURE

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ing the numbers of items wanted.)

The pamphlets and booklets listed below are of more than ordinary interest.

- 1 MY FIRST SEASON'S EXPERIENCE WITH THE HONEYBEE. By the "Spectator," of the *Outlook*, of New York. A ten-page leaflet detailing the experiences of this well-known writer. You will read the leaflet through before you lay it down. Free.
- 2 THE BEEKEEPER AND FRUIT-GROWER. A 15-page booklet giving actual facts regarding the value of bees to fruit, and showing how beekeeping may be doubly profitable to the fruit-grower. Fruit-growers are realizing as never before the necessity of having honeybees in close proximity to their blossoming fruit. Free.
- 4 CATALOG OF BEEKEEPERS' SUPPLIES. Our complete catalog will be mailed free to any address on request.
- 7 SPRING MANAGEMENT OF BEES. A 14-page booklet detailing the experiences of some successful beekeepers, and giving instructions on this oftentimes perplexing matter. Price 10 cts.
- 8 HABITS OF THE HONEYBEE. By Dr. E. F. Phillips. A somewhat scientific handling of the habits and anatomy of the bee. Price 10 cents.
- 9 HOW TO KEEP BEES. A book of 228 pages detailing in a most interesting manner the experiences of a beginner in such a way as to help other beginners. Price \$1.00 postpaid.
- 10 THE A B C OF BEE CULTURE. A complete encyclopedia of bees, of 712 pages, fully illustrated, \$2.00 postpaid; half leather, \$2.75.
- 11 GLEANINGS IN BEE CULTURE. A 64-page illustrated semi-monthly magazine—the leading exponent of bee culture in this country. Ten cents per issue, but to new subscribers we will furnish it six months for 25 cents.
- 12 BACK-YARD BEEKEEPING. Six interesting lessons written in readable newspaper style. Many facts encouraging the "city bound" man or woman with the back-to-the-land longing. Free.
- 13 THE BUCKEYE BEEHIVE, or the management of bees in double-walled hives. Of special interest to the amateur beekeeper. The most complete booklet we publish for free distribution. Illustrated throughout; 84 pages.
- 14 ADVANCED BEE CULTURE. A beautifully printed book. Best plate paper has been used throughout its 200 pages, with the result that its many fine illustrations are unusually clear in every detail. Bound in attractive and substantial cloth; \$1.00 per copy, postpaid.

The coupon below may be used as an order sheet by properly checking the numbers of items wanted, and adding your signature, and remittance if required.

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The A. I. Root Co., Medina, Ohio.

Please send me the items checked. I enclose

\$.....to cover the cost.

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Town.....

B. C. State.....

SPECIAL NOTICES

BY OUR BUSINESS MANAGER

ALSIKE AND MEDIUM CLOVER SEED.

There is still time to sow alsike or other clover seed; and as the market has declined somewhat we offer choice seed as follows, bags included, not pre-paid: peck, \$3.00; $\frac{1}{2}$ bushel, \$5.50; one bushel, \$10.50; 2 bushels, \$20.50. Medium clover seed, peck, \$2.60; $\frac{1}{2}$ bushel, \$5.00; bushel, \$9.50; 2 bushels for \$18.50.

SWEET-CLOVER SEED.

We have added further to our stock of sweet-clover seed, and offer the white, both hulled and unhulled, at \$2.00 per hundred less than the prices which have ruled for the past 3 months. We will furnish the white at the same price as we have been selling the biennial yellow as follows:

	Prices in lots of	1 lb.	10 lb.	25 lb.	100 lb.
<i>Melilotus alba</i> , biennial:					
White sweet clover, unhulled	.21	\$1.90	\$4.50	\$17.00	
White sweet clover, hulled	.28	2.60	6.25	24.00	
<i>Melilotus officinalis</i> , biennial:					
Yellow sweet clover, unhull'd	.21	1.90	4.50	17.00	
Yellow sweet clover, hulled	.28	2.60	6.25	24.00	
Yellow sweet clover, annual	.14	1.20	2.75	10.00	

Convention Notices

The following is a list of the new officers of the Eastern Massachusetts Society of Beekeepers, chosen at the annual meeting April 4: President, Thomas J. Hawkins, 4 Emory St., Malden, Mass.; First Vice-president, J. B. Levens, 274 Tremont St., Malden, Mass.; Second Vice-president, Everett L. West, 33 Pearl St., Cambridge, Mass.; Secretary-Treasurer, Leslie A. M. Stewart, 200 Union St., Franklin, Mass.

FIELD-DAY DEMONSTRATION TO BE HELD AT FORKS OF CREDIT, ONT., CAN., MAY 25, 1914.

The First Canadian National Field Day Meet will be held on Victoria day, May 25, 1914, at the apiary of Mr. H. G. Sibbald, past president of the Ontario Beekeepers' Association, at the Forks of the Credit, Ont.

This great event, which has slowly been gathering force since last December, has now reached that point where the various committees which have been working on the plan feel that it will surpass anything of the kind heretofore attempted in the British Empire.

Plans have been laid for handling a great crowd. Members of committees will be at the various stations from the city up to assist the stranger and bid him welcome. Special coaches will be placed on the train for the beekeepers' accommodation, and the good old-fashioned farmers' hayrack will convey the jolly crowd to the yard, some half mile away.

All the beekeepers within reasonable distance are requested to bring their well-loaded baskets, and prepare for two meals (noon and evening), to take care of those who come from long distances.

To the beekeeper confined within the narrow limits of city life this field day and picnic offers a day of relaxation and freedom from the cares and worries of business, while the producer from the country is afforded an opportunity to meet the city man.

The editors of GLEANINGS and the *American Bee Journal* have consented to be present and take a part in the work of demonstration, while our own fair Province will have its corps of brilliant men on the "firing line."

For a day's outing no spot in all this magnificent country of ours can surpass the beautiful Forks. Poets have sung its praise; historians have recorded its beauties, but the tongue of man cannot justly describe the sublime and majestic scenery.

Then, dear beekeeper, lay aside your cares and anxieties, come along and bring your families, and enjoy the pleasure of friendly intercourse with the great men of our ranks.

The committee herewith present the program with a feeling of pardonable pride. Never in the history

of beedom in Canada has such a brilliant galaxy of men been brought together for such a purpose. In the evening of life, while dwelling on sweet thoughts of the past, may this great field meet induce you to say:

"Backward, turn backward, O time! in thy flight,
Make me a child again just for to-night."

PROGRAM.

- C. P. R. train leaves Union at 7:20 A.M.; arrives at Forks of Credit at 9:25 A.M.
10:00 A.M.—General inspection of apiary, honey-house, appliances, etc.; conducted by Mr. Sibbald.
10:45 A.M.—Mr. J. L. Byer, President of the O. B. K. A., will officiate.
11:30 A.M.—Greetings to all sister organizations and delegates.
12:00 M.—Lunch, provided by ladies.
1:15 P.M.—Mr. C. P. Dadant, editor of the *American Bee Journal*.
2:15 P.M.—Mr. Morley Pettit, Provincial Apiarist.
3:00 P.M.—Mr. E. R. Root, editor *Gleanings in Bee Culture*.
4:00 P.M.—Mr. M. B. Holmes, Athens, Ont., director O. B. K. A.
4:45 P.M.—Mr. Wm. Couse, Streetsville, Ont.
5:15 P.M.—Lunch, toasts, greetings, etc.
Train leaves Forks at 6:15 P.M.; arrives at Union at 8:25 P.M.
Ladies' committee (white badge), Mrs. Sibbald, Pres. Please leave baskets with ladies' committee.
Information committee (blue badge), all stations.
Field committee (yellow badge), Mr. Wilson, Pres-Fare, return trip, \$1.15.
G. R. CHAPMAN, Pres.

CHAS. E. HOOPER, Sec.
Toronto, Ont., April 3, 1914.

KIND WORDS.

My warm regards to my old friend A. I. Root. I presume he would still consider me a latitudinarian in theology, but I am with him in his fight on the saloons, and consider his defense of the Japanese brother a most timely contribution to good will among the races. *Macte esto virtute* (more power to thy elbow).

Chicago, Ill., July 16.

H. J. JAXON.

We greatly enjoy GLEANINGS, especially the Homes department. It is appreciated as much as a letter from a relative. We are sorry Brother Root is like the rest of us, feeling his age somewhat, and making a hero's fight for life; but his strong words of cheer often give us courage in many ways.

MR. AND MRS. L. C. AXTELL.
Roseville, Ill., March 19.

[Older readers will appreciate the above. To others I may explain briefly that, toward 40 years ago, when GLEANINGS was started, Mrs. Axtell was a helpless invalid, confined to her bed; but she got hold of GLEANINGS, got the "bee fever," ultimately "rose up and walked," and finally astonished the beekeeping world with her crops of honey and contributions to mission work.—A. I. R.]

Mr. Root:—I wish to tell you how much good I get from your writings in GLEANINGS. I hope you may live many years to carry on the good work. I am writing for a good many farm papers, and am trying to do what good I can that way. I have a farm near here now occupied by my son, while I am living through most of the year here. In the forenoon I am at my desk. In the afternoon I walk around and rest and read.

For a few months I have been having some trouble with my bladder. It seems to be irritable, so that I must get up from two to six times a night; and urinating is slow, and hurts me if I go very long. I am perfectly temperate—use no tea nor coffee. I am sixty years old, and never had any excesses whatever. I have had my urine tested, and they find no kidney trouble. There just seems to be an acid condition of the system that takes its course this way.

My diet is about as follows: Morning, toasted white bread, with now and then a dish of some cereal. At times a few prunes or a bit of bacon and a cup of cereal coffee. Noon, a little potato and some one other vegetable, and often a salad of lettuce and celery—rarely pie or cake; night, a little toast again or a shredded wheat, or some such thing, with figs or raisins or dates.

Every morning I spend a few minutes in exercising. I walk about quite a little, and am well except that I am rather constipated and have this bladder trouble. The lower part of the spine is sore a good deal of the time, and often the cords of the upper and middle back get contracted, and it seems to me when they are most so the bladder trouble is worst. I eat very little meat or eggs or milk.

Now, you may be able to help me. What would you suggest in the way of change of diet? If you could map out for me a little menu it would be a great kindness, and one which I should highly reciprocate. I may say that, in regard to the constipation, I try to relieve this by the use of the enema and not by taking drugs. I have taken very little medicine these past ten years.

In your writings you have spoken of apples. I wonder if you could tell me where I could get some nice mild apples at a reasonable price. Our crop was a failure last year. I have not eaten many apples, as it has seemed to me they added to the acidity of the body.

The simple question is, what would you do yourself under these circumstances? I think we may often help one another by making suggestions along these lines. I often get letters asking for help on different matters. I have been highly blessed in my writings for farm and other papers. In a few days I expect to have a little book published under the title "Without Sound of Hammer." It will be one of a devotional series brought out by the M. E. Book Concern. I feel that you will like to know about these things.

The inclosed bill is not sent by way of payment for any advice you may give me, but because I know you are a busy man, and I do not want to feel that I am imposing upon you without some little return.

May He who is always with every man who trusts him keep you and yours.

I drink three pints to two quarts of distilled water every day.

EDGAR L. VINCENT.

Binghamton, N. Y., Jan. 29.

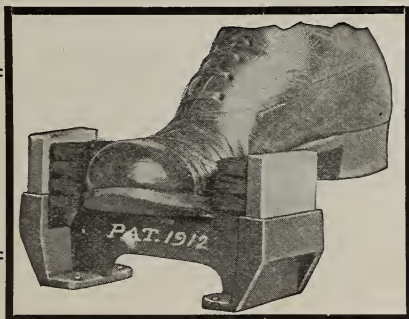
My good friend, as I have never taken any pay for advice I will have the \$1.00 placed to your credit on GLEANINGS.

As you state it, you are living so near right I can only make a few suggestions. I would try cutting off all sweets, even sweet fruits, such as figs and raisins. I have found relief by having no supper except nice mellow apples not later than 4 or 5 P. M. I think you can get nice apples in the large towns as low as or lower than I can get them here; *i. e.*, 30 cts. a dozen. Last, but not least, make it a point to do some work outdoors if possible every day that will at least *start* the perspiration, and don't forget to ask God daily to give you wisdom and understanding in regard to the care of the body he has given you. I will pray for you.

If your literary work seems to aggravate the trouble, drop it for a time; and, if possible, get deeply interested in some outdoor occupation, say in developing some new idea with plants or domestic animals. Have a daily sponge bath, either night or morning, in a warm room.—A. I. R.

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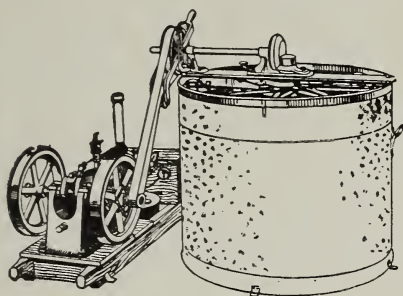
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